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WEAK SECURITY TAINTS DIRECTORY

*Fake listings, lack of
vetting undermine UDDI*

BY LEE COPELAND GLADWIN

A major industry effort to build an online directory of Web services for business is riddled with embarrassing security problems that have marred its arrival.

Last month's launch of the Universal Description, Discovery and Integration directory, a Yellow Pages-style directory that lets businesses register their Internet services and capabilities online, was intended to drive support for Web services. But lax security by UDDI founders IBM and Microsoft Corp. has permitted the Web-based directory to be populated with fake firms, false links and uninformed participants.

For example, "Loud Speakers Inc." is registered as a Mountain View, Calif.-based firm run by John McLoud, whose public speakers talk at a level higher than 100 decibels. The UDDI also describes Loud Speaker's Web service as juju beads for "warding off evil spirits." The company isn't listed with directory assistance and can't be found on the Web.

As for bad links, the UDDI listing for Oracle Corp. links to a pornography site, not a Web service.

UDDI, page 12

ORACLE RETREATS

FACED WITH A USER REVOLT AND FIERCE competition from IBM, Oracle last week cut prices on its database software by ditching its high-priced "power-unit" licensing model.

Database Customer Satisfaction Rankings

Product features	Pricing
1. Oracle	1. IBM
2. IBM	2. Microsoft
3. Microsoft	3. Informix
4. Informix	4. Sybase
5. Sybase	5. Oracle

SOURCE: COMPUTERWORLD
SURVEY OF 355 IT PROFESSIONALS

Customers said it was about time. A new *Computerworld* survey of 355 database users ranked Oracle's database tops in product features but dead last on pricing.

Stories by Dan Verton begin on page 6.



SWITCHING FROM ORACLE to Microsoft's SQL Server saved Smead Manufacturing about \$4 million, says Joseph Vossen, vice president of information systems.

FED ACCESS LAW COULD AFFECT IT

*Disabilities regulations
go into effect this week*

BY PATRICK THIBODEAU
WASHINGTON

The federal government plans to usher in new regulations this week that will require all electronic and IT equipment used by federal agencies and departments to be accessible

to all government employees. The impact is expected to extend to the private sector as well.

Under a new law referred to as Sec. 508 of the Rehabilitation Act, by June 21 all electronic products purchased by the government, ranging from fax machines to enterprise software, must be accessible to people with disabilities, with some limited exceptions.

For federal agencies, the law has prompted systems reviews reminiscent of Y2k projects, and with some of the cost. For example, the Environmental Protection Agency's Envirofacts Web site, which provides environmental data, estimates that the cost of complying with the law is \$125,000, according to Jerry Carrillo, who is responsible for coordinating the EPA's Sec. 508 initiative.

Access Law, page 61

HOUSTON FLOOD TESTS TECH PLANNING

*Government, health care
sectors learn lessons*

BY TODD R. WEISS

As rains from Tropical Storm Allison inundated the Houston area early last week, corporate IT departments scrambled to restore computer systems and communications in buildings downtown.

While no disaster recovery plan was waterproof, IT operations in the health care and government sectors appeared to be particularly hard hit.

For example, at the Texas Medical Center campus, where hospitals lost power, management learned that IT employees should have been included

as integral members of the emergency command center, said Ken Mattox, chief of staff at Ben Taub Hospital, one of about 54 medical institutions on the campus.

"If I knew this was coming all over again, I would get a bunch of wire-pullers and an IT person in the command center very early," he said. "Once the hardware starts going kablooey, it takes a little time to get it back up to speed."

Another problem revealed during the storm was that hospitals across the city have different data file formats, often making it impossible to exchange patient records electronically, Mattox said. That

Flooding, page 16

EMERGENCY IT

A close-up, high-contrast photograph of a woman's face. The top half shows her eyes, which are dark and looking directly at the camera. The bottom half shows her mouth, which is slightly open, revealing her teeth. The lighting is dramatic, with deep shadows and bright highlights.

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ALAN BERNER/SEATTLE TIMES

GREATER HAPPINESS THROUGH FISH

A management philosophy inspired by Seattle's flinging fishmongers is making isolated IT workers more enthusiastic and more satisfied in their jobs. **PAGE 38**

AN ANT SHALL LEAD THEM

The humble ant may herald a revolution in software design. Systems that mimic ant behavior use many

small, autonomous software agents that together can solve enormously complex problems. **PAGE 46**



JOHN BRILLON

JUNE 18, 2001

COMPUTERWORLD THIS WEEK

NEWS

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10 Three airlines are teaming up with Boeing to launch airborne broadband Internet service on a total of 1,500 aircraft next year.

10 Certicom releases new encryption technology for Palm handhelds.

14 Small, targeted projects are more successful than corporate sea changes, say e-business leaders in the chemical industry.

14 3Com releases new products for building and enhancing networks as ammunition in the company's battle with goliaths Cisco and Nortel.

21 Struggling business applications vendor J.D. Edwards shines the spotlight on collaborative commerce technology as the company tries to reverse declining sales.

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30 Workstyles: IT workers at DreamWorks enjoy plenty of Hollywood perks, but the job also comes with some unique challenges.

30 Ed Yourdon says mentoring isn't a role IT professionals train for, but it can save companies millions of dollars in wasted costs and failed projects.

31 Fancy front ends that connect to messy back-ends are gaining popularity in the Web age, writes Kevin Fogarty. But all they really do is add another layer to already-complex systems.

32 Nurturing diversity is about more than just recognizing differences in color and gender, according to people who work at *Computerworld's* Top 10 Best Places to Work for Diversity.

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44 Security Journal: A court order to allow electronic surveillance forces security manager Mathias Thurman to scramble to protect his company's network.

48 Options abound in e-commerce servers that can handle back-end processing and integrate well with legacy systems.

50 Keeping secrets has been the business of the information assurance director of the National Security Agency for 37 years. Here's his advice for IT organizations looking to protect data and systems.

52 Emerging Companies: Authoria offers knowledge-base software that lets human resources staff or employees access personalized benefits information.

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24 Pimm Fox writes about the best way to spend the extra IT training money that companies should get in the next few years.

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26 William M. Ulrich urges IT organizations to demand better tools for their legacy systems.

62 Frank Hayes says IT shops shouldn't wring their hands in glee as they watch the dot-coms die.

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ONLINE

BACK TO SCHOOL

In the E-Commerce Community, Scott Harmon tells us why he learned everything he needed to know about e-business in his high school chemistry lab.
www.computerworld.com/ecommerce

VENDOR PROBLEMS: YOUR PROBLEM?

This is just one of the topics in the E-Commerce Discussion Forum. If you have thoughts about customer relationship management, the issues related to doing business in Europe or any other e-business issue, come on down and have your say.
www.computerworld.com/forums

FINDING A PRINCE FOR A CUSTOMER

A princess who uses a customer relationship management system can greatly shorten her hunt for the prince among the frogs. David Rubinstein explains it all in the E-Commerce Community.
www.computerworld.com/ecommerce

HAVE AN IDEA ABOUT LINUX? WINDOWS?

Head to the Operating Systems Forum in *Computerworld's* discussion forums. Share your views on Linux and whether it falls short of the mainstream. Or tell us what you think about Active Directory.
www.computerworld.com/forums

Oracle Scraps Unpopular Database Pricing Model

Oracle Faces Challenges in Marketplace

BY DAN VERTON

IN TERMS OF innovation, Oracle Corp.'s database software wins hands down, users and analysts say. And the product is getting even better.

"I'm sleeping pretty well at night," said Mark Jarvis, Oracle's chief marketing officer. The Oracle9i database, which was released last week, will "change the database world

forever," he boasted.

Indeed, most analysts agree that Oracle9i is a major upgrade that comes at a time when Oracle's main competitors — IBM and Microsoft Corp. — have very few new products on the market. Oracle9i offers cutting-edge features, such as clustering technology, that the other products don't.

But innovation isn't everything.

Oracle faces a variety of challenges in the enterprise database market, including stiff competition from IBM and Microsoft, delays in big customer purchases, the economic downturn and customer concerns about high prices.

A major *Computerworld* survey

of 355 IT professionals — including 100 Oracle users — paints a complex portrait of the vendor: 53% of the Oracle database users said they like the product overall, yet only 39% said they like the vendor's practices overall (see chart below). Specifically, the users said they love the product's reliability, scalability, features and performance — but not the recently abandoned Universal Power Unit licensing model (see related story at right).

Despite significant concerns about the company's high prices, three quarters of the Oracle users said that on balance, the product is worth the expense.

Overview, page 8

Vendor Reacts To IBM Rivalry, User Concern

BY DAN VERTON

FOR THE PAST YEAR, customers and rivals of Oracle Corp. have battered CEO Larry Ellison for what they called the company's exorbitant pricing of its flagship database software. Last week, Ellison hit back.

Speaking to a packed house at the launch of the company's new Oracle9i database, Ellison announced that the company is eliminating its Universal Power Unit (UPU) pricing and switching to the same pricing model used by rivals IBM and Microsoft Corp.

Now, instead of paying for the software based on the speed of the processors that run it, Oracle customers will pay a flat fee of \$40,000 per processor for the enterprise edition of the database and \$15,000 for the standard edition. Oracle's per-processor pricing also means an overall price cut for users when compared with the UPU method.

"It's about time," said Tim Gotham, president of Oracle reseller Premier Design Systems Inc. in Minneapolis.

"The power-unit pricing was unfair and ridiculous, in my opinion," he added. "The new per-processor pricing is much more fair and more in line with the rest of the industry."

The change couldn't have

come at a better time for the software developer.

In a major survey of 355 database users and in separate interviews with 30 Oracle customers last month, *Computerworld* found that when it came to price, many users ranked Oracle dead last behind rivals IBM, Microsoft, Informix Software (recently purchased by IBM) and Sybase Inc.

Ellison said in an interview last week that he made the move in response to user concerns and IBM's marketing challenge. Now both companies will have the same pricing model, making it easier to compare prices, he said.

"Every year, we lower our prices, and we sell more software," Ellison said. "This is, in fact, a price reduction from [the power-unit model]." For some configurations, ac-

cording to figures posted at Oracle's online store, the new per-processor scheme will cut prices by 15% to 18%, compared with the UPU approach.

Although Oracle's per-processor pricing is still twice as expensive as IBM's, Ellison said there's a good reason for that: Oracle9i comes out of the box with more features than IBM's DB2. Once users start adding in the cost of features IBM charges extra for, he claimed, "they're actually more expensive than we are."

Many users interviewed said that Oracle's previous sticker prices were becoming harder and harder to justify to senior business executives.

"When upper management is shown a budget difference of \$150,000 for the same project based on the database used,

Under UPU pricing, Oracle had the highest percentage of users unhappy with its licensing structure (41%); IBM had the lowest (19%).
—*Computerworld* survey

Report Card for Database Vendors

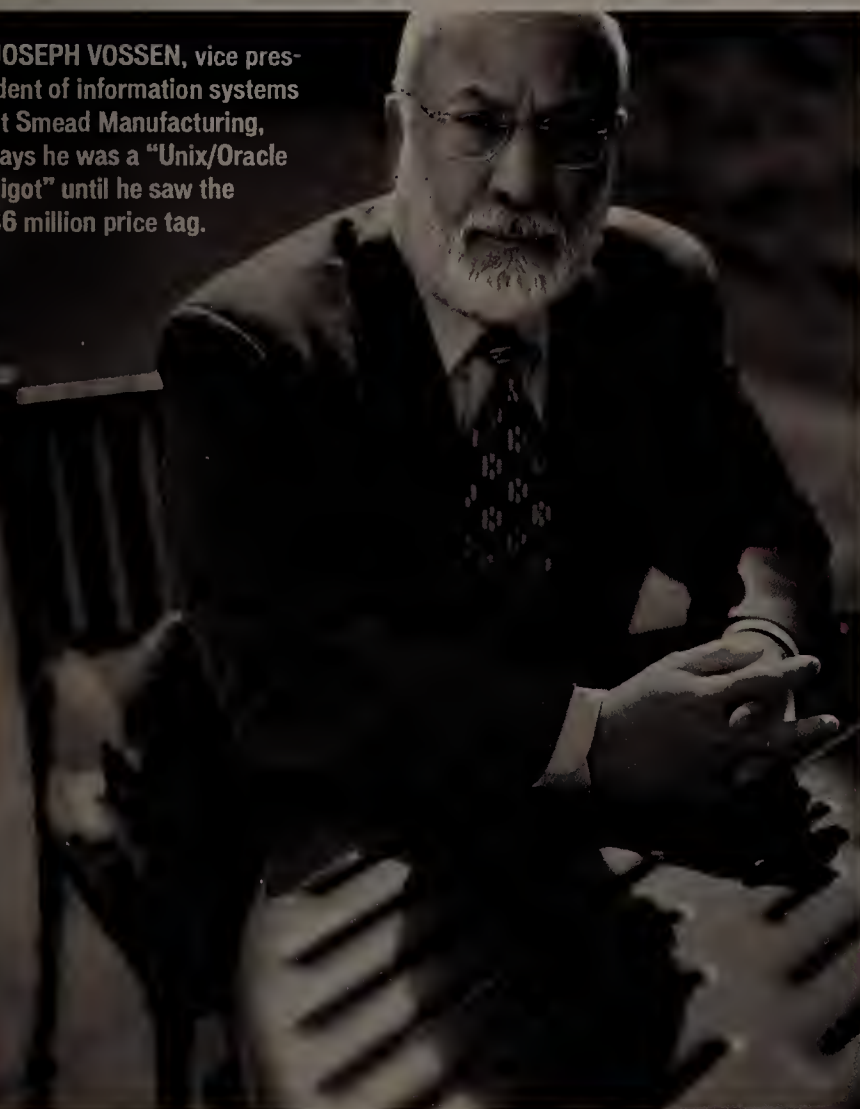
HIGH SCORES ARE IN **BOLD**. LOW SCORES ARE IN **RED**.

Below are the average customer satisfaction scores for five major database software vendors, based on a scale of 1 to 7, where 7 is high. Oracle ranks high in product features and performance, but low on costs.

USER RATINGS OF THE PRODUCT	ORACLE	IBM	INFORMIX	MICROSOFT	SYBASE
Features	5.86	5.67	5.21	5.52	5.15
Performance	5.73	5.69	5.36	5.43	5.17
Scalability	5.93	5.88	5.14	5.08	5.13
Reliability	5.94	6.27	5.65	5.29	5.45
Cost to purchase or license	4.27	5.67	4.73	5.36	4.63
Cost to operate or maintain	4.51	5.18	5.09	5.43	5.30
Overall experience with the product	5.49	5.73	5.43	5.39	5.22
PRODUCT AVERAGE	5.68	5.70	5.30	5.33	5.40
USER RATINGS OF THE VENDOR	ORACLE	IBM	INFORMIX	MICROSOFT	SYBASE
Licensing structure	4.96	5.42	4.92	4.92	5.06
Flexibility in pricing	4.24	4.78	4.59	4.71	4.74
Technical support	5.15	5.37	4.94	4.67	5.06
Customer support	5.03	5.30	4.83	4.56	4.92
Overall experience with the vendor	5.09	5.45	4.91	4.85	5.06
VENDOR AVERAGE	4.90	5.27	4.82	4.72	4.95
ALL FACTORS AVERAGE	5.30	5.54	5.10	5.11	5.11

Methodology: Telephone survey of 355 IT professionals at U.S. organizations about enterprise database management software. Respondents included 100 Oracle, 100 IBM, 100 Microsoft, 100 Sybase and 66 Informix users. Some respondents answered questions about two different databases they have installed. The interviews were conducted by First Market Research, an independent research company in Austin, Texas, and took place from April 17 through May 4, 2001.

JOSEPH VOSSEN, vice president of information systems at Smead Manufacturing, says he was a "Unix/Oracle bigot" until he saw the \$6 million price tag.



MARK LUNENBURG

which database do you think we are going to use?" asked Steve Lutz, who runs six Web sites for Infonautics Corp. in King of Prussia, Pa. His company has considered moving to another vendor because of Oracle's pricing, he said.

Computerworld's survey, which included 100 Oracle users, found that a whopping 74% of Oracle users considered the cost to install and run the firm's database "fairly high" or "very high" — a much larger percentage than for other vendors. (IBM's figure was 38%, for example.) The survey was conducted in April and May, before the company made its Oracle9i and pricing announcements.

"Pricing is one of the most important and difficult problems facing Oracle today," said James Governor, an analyst at Illuminata Inc. in Nashua, N.H. "There must be a connection" between the company's recent

earnings disappointment and its premium pricing, he added.

On March 15, Oracle reported a database license growth rate of a mere 6% for the third quarter, far less than its original prediction of a 20% increase. Ellison blamed the dip on users delaying IT purchases because of the overall economic slowdown, but analysts and users quickly pointed their fingers at exorbitant pricing [Page One, March 19].

Oracle officials previously defended the UPU model as more equitable for users, saying that competitors charge users for processors regardless of whether those processors are running the database software.

But many users said Oracle's UPU pricing model was still too high and that it forced them to delay or even cancel orders for database software.

Last year, Joseph Vossen, vice president of information systems at Smead Manufactur-

ing Co. in Hastings, Minn., investigated the cost to upgrade his existing Unix-based Oracle database environment. To his surprise, the self-described "Unix/Oracle bigot" soon realized that he was looking at a \$6 million price tag for the Oracle upgrade — enough to pay the salaries of his 40-person staff for three years.

"Oracle is a good product, but [with Microsoft SQL Server], we were looking at saving somewhere in the \$4 million range over three years," said Vossen, who suffered the loss of all of his Oracle database administrators after he announced plans to switch to SQL Server. "With the [pricing] models [Oracle was] presenting to us, we don't believe they could have come close."

Chuck Hamilton, an Oracle database administrator at West Chester, Pa.-based retailer QVC Inc., said his firm evaluated database software from Oracle, IBM and Microsoft. Although each performed well enough to win the sale, Oracle's pricing came in five times higher than the others', under the UPU model, he said.

"Our developers, who previously were Microsoft fans, were so happy with the performance achieved by Oracle on several recent projects that they wanted to go with Oracle for all future projects," Hamilton said. "But that UPU pretty much nailed the coffin shut on Oracle."

That has been music to the ears of Oracle's competitors, particularly Sybase. "Last year, my database business grew 16%, and I have Oracle to thank for it," said CEO John Chen.

Jacqueline Woods, Oracle's vice president of global practices, contended that pricing wasn't a big issue until recently because users understood that Oracle's database has a lower total cost of ownership (TCO) than those of its rivals.

The flap over pricing, she said, is really the result of a carefully orchestrated campaign by Oracle's competitors, which have ignored the additional development and integration costs associated with their own database software.

Oracle maintains that Ora-

cle9i offers a much lower TCO than competitors' products do, but users are split on the TCO sales pitch.

"We have all four major [database] vendors in-house for all kinds of different applications, [but] Oracle, for one, is too expensive," said Steve Hamer, a database administra-

tor at management consulting firm Hewitt Associates LLC in Lincolnshire, Ill. "We try to stay away from Oracle unless it's...required."

In *Computerworld's* survey, only 21% of Oracle users said that they were very or extremely satisfied with the "cost

Pricing, page 8

How Oracle's Pricing Stacks Up

The Pricing Models

Oracle

Per processor:	\$40,000 (Enterprise Edition)
Per processor:	\$15,000 (Standard Edition)
Named user (single server):	\$600 x minimum number of named users
Named user (multiserver):	\$750 x minimum number of named users

IBM

Per processor:	\$17,500
Per processor (clustered):	\$22,500

Informix

Per processor:	\$46,000
Per concurrent user:	\$1,800

Microsoft

Per processor:	\$19,999
Per seat/client (one server plus 25 client access devices):	\$11,099
Version upgrade:	\$5,549

Sybase

Per NT server (with > 4 processors):	\$995 + \$195 per network seat
Per Unix server (with > 4 processors):	\$3,995 + \$795 per seat

How It Adds Up

Calculated using the vendors' pricing models, for a capacity-based Enterprise Edition license (support/updates not included). Oracle's "old" prices are calculated using the Universal Power Unit (UPU) model, with a volume discount.

CONFIGURATION NO. 1:

Two Windows NT servers, each with four 700-MHz Intel processors

Oracle8i/9i:	New	\$320,000
Oracle8i/9i:	Old	\$392,000
Informix IDS:		\$368,000
Microsoft SQL Server 2000:		\$159,992
IBM DB2 (clustered):		\$180,000
Sybase Adaptive Server Enterprise 12:		\$38,455*

*To compare Oracle's UPU pricing to Sybase pricing, the number of Sybase users was calculated using Oracle's minimum number of required named users for the configuration, which is 187.

CONFIGURATION NO. 2:

One enterprise Unix server with eight 450-MHz RISC processors

Oracle8i/9i:	New	\$320,000
Oracle8i/9i:	Old	\$378,000
Informix IDS:		\$368,000
Microsoft:		Not applicable
IBM DB2 (clustered):		\$180,000
Sybase:		\$88,265**

**To compare Oracle's UPU pricing to Sybase pricing, the number of Sybase users was calculated using Oracle's minimum number of required named users for the configuration, which is 106.

More than three quarters of the Oracle users said that even though the database is costly, it's worth the expense.

—Computerworld survey

Continued from page 7

Pricing

to operate and maintain" Oracle's database.

However, Paul Dorsey, president of Dulcian Inc., an Oracle consulting firm in Iselin, N.J., said that while the upfront costs associated with Oracle are higher than those of other products, Oracle's TCO isn't.

"I build using Oracle software because I build systems for the least amount of total cost using Oracle," said Dorsey, who is also president of the New York Oracle Users Group Inc. The additional integration work needed with databases from other vendors, such as IBM, significantly increases the total cost of the system, he said.

But for some users, the Oracle sticker shock was too much.

Last year, Judith Gorman, CEO of Stamford, Conn.-based Medigenesis Inc., an online clearinghouse of medical statistics, chose Oracle8i as the database to help her start-up get off the ground.

But then the price tag for a Unix-based Oracle database infrastructure came in at more than \$1 million, including a \$117,000 license fee. That was untenable for a start-up, so she switched to Microsoft.

"Quite literally, we would not exist if we had not had the Microsoft option," said Gorman, who chose SQL Server even though it was still a beta product at the time. "Oracle would have bankrupted us before we even made it to hard launch."

Betsy Burton, an analyst at Stamford, Conn.-based Gartner Inc. and a longtime critic of UPU pricing, applauded Ellison's decision to abandon the power-unit model. "Now Oracle is listening to its customers," Burton said. She added that users who bought databases under the UPU scheme should contact Oracle "immediately to renegotiate their contracts." ▀

Continued from page 6

Overview

"Oracle is still the outright leader in the space, with an excellent product," said James Governor, an analyst at Illuminata Inc., a Nashua, N.H.-based consultancy. "[Oracle9i] will raise the bar again in terms of scalability and resilience."

Many users agree. "Oracle has put things into the database that substantially improved the performance and scalability of Web applications," said Rich Niemiec, president of the International Oracle Users Group - Americas, based in Chicago. "This gives them a tremendous advantage over competitors on the data-

base side while also giving current Oracle customers compelling reasons to upgrade."

In fact, Oracle officials bristle at the notion that they have any competition at all in the database arena. Jacqueline Woods, Oracle's vice president of global practices, said the company's new message is simple: Oracle9i's technology innovation, performance, ease of integration and total cost of ownership will prove to be the winning combination.

However, after a slow third quarter that saw database license revenue grow a mere 6% — far less than the 20% analysts had predicted — Oracle's database sales could be slowing down again.

Wendell Laidley, an analyst in Credit Suisse First Boston's technology group in San Francisco, said early forecasts for the fourth quarter predict that database sales could drop as much as 10% year over year, mostly because of the sluggish economy.

Plus, some customers may simply wait a while before upgrading, although Oracle expects a record adoption rate.

"Most of my customers have barely migrated to Oracle8, let alone Oracle8i," said Tim Gotham, president of Oracle

reseller Premier Design Systems Inc. in Minneapolis. "All of my customers have a rule that any Oracle database version must be in the market a minimum of six to 12 months before they would consider putting a production system on that version."

The bottom line is that "the [database] market-share wars are far from over," said Betsy Burton, an analyst at Gartner Inc. in Stamford, Conn. Even with more attractive pricing from Oracle, don't count IBM out, she said.

Gartner recently reported that Oracle held on to the No. 1 position last year with a 33.8% market share worldwide for database management software, based on licensing revenue. But IBM is just a few percentage points behind at 30.1%.

And while Microsoft captured less than 15% of the overall database market, in the fierce battle over the Windows NT portion of that market, the company managed to surpass Oracle, with a 38%

share, Gartner reported.

Despite this apparent Microsoft coup, Burton said, the real technology contest these days is between Oracle and IBM's DB2.

Oracle and IBM can continue to fight it out over software features, but not every user wants every possible feature, noted Carl Olofson, an analyst at IDC in Framingham, Mass. "It's hard

to say who is the technological leader in this market, since it depends on what you value and how you want it delivered," Olofson said.

Computerworld's survey results bear that out. Although Oracle scored higher than both IBM and Microsoft in the categories of reliability, scalability and performance, IBM was the clear favorite in terms of users' overall experience and satisfaction. Microsoft fared better than both Oracle and IBM in terms of the cost to operate and maintain the database.

Microsoft's SQL Server has improved dramatically over the years, but analysts said the

company really competes on price. Microsoft doesn't have the tools and manageability that Oracle and IBM offer, analysts noted.

"There are technical trade-offs no matter what you are choosing between," acknowledged Jeff Ressler, lead product manager for Microsoft SQL Server.

In the end, Ressler said, most users are simply looking for a scalable database that delivers the features they need to run their businesses. He said that the next major release of SQL Server, code-named Yukon, will make it easier to build high-end applications.

Even though Oracle is "raising the stakes all the time" with new features like online analytical processing and data mining, IBM and Microsoft are still viable options for many users, said Richard Winter, CEO of Waltham, Mass.-based database think-tank Winter Corp.

He said that only 10% of users have the kind of demanding, high-end requirements that need all of that Oracle innovation. ▀

MOREONLINE

For tips on negotiating with Oracle over database licensing, visit our Web site: www.computerworld.com/oracle

Ellison Responds To Users, IBM

Computerworld's Dan Verton spoke with Oracle CEO Larry Ellison at the Redwood Shores, Calif., event at which Oracle9i and the company's new pricing program were announced.

Q: Is your move away from power-unit pricing an attempt to counter IBM or respond to users?

A: I think it's both. Our pricing was designed to make it as easy as possible to compare our pricing to IBM's pricing. IBM wants to compare prices. Let's compare prices.

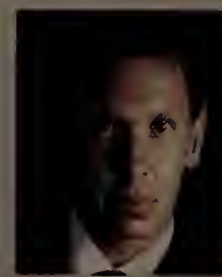
Q: When you moved to Universal Power Unit pricing, you claimed it was to streamline pricing and make it more equitable for all users. Do you feel that by abandoning that approach in favor of per-processor pricing, you're main-

taining that equitable, streamlined pricing approach?

A: IBM has made such a big stink about this. I keep reading in the newspaper about how we're four, five and six times more expensive, and that's just preposterous. The only issue that IBM has is the pricing issue, so let's get this issue behind us. You want processor-based pricing? We'll give you processor-based pricing. We want to make a

comparison between Oracle and IBM as easy as possible. It's simple: This is our price, \$40,000 per processor. They're priced at \$20,000 per processor, but look at all of the things that [DB2] doesn't include. They're getting you for every little thing. You

start adding all this stuff up, and they're actually more expensive than we are. Isn't that a surprise? We're much more economical. Software price is just one component of total cost of ownership, which includes the software, the hardware, the network and the development of the application.



LARRY ELLISON:
"IBM wants to compare prices. Let's compare prices."

Q: Are you concerned about what has been called a potential e-business backlash from users who may not be ready to put all of their application eggs in the Oracle basket?

A: No. We're by far the most popular database with SAP, PeopleSoft or

Siebel users. We've achieved the Holy Grail of database computing. Maybe the single most important thing to all of our customers is the issue of fault tolerance. The idea is that these applications just won't go down.

A customer gets through to you. So, now what?

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Airlines, Boeing Take Internet to the Skies

Analysts call venture a winner, but it faces competition and nagging problems

BY BOB BREWIN

American Airlines Inc., United Air Lines Inc. and Delta Air Lines Inc. last week announced plans to launch broadband airborne Internet service on 1,500 aircraft, with initial service slated to start in the second half of next year.

The three airlines are teaming up with The Boeing Co. and initially planning service on domestic U.S. and trans-Atlantic routes over satellite transponders leased from Loral Space & Communications Ltd. in New York and General Electric Co. Boeing has yet to sign an agreement for satellite capacity across the Pacific, Boeing spokesman Terrance Scott said.

The Connexion by Boeing service will provide raw data speeds of 20M bit/sec. to the aircraft, with upload speeds from the planes of between 1M and 1.5M bit/sec., according to Scott. The minimum guaranteed speed to a passenger will be 56K bit/sec., or the equivalent of a dial-up modem.

Scott couldn't provide an average data transmission speed but said passengers would be slowed to 56K bit/sec. only if "all 300 passengers on the plane hooked in at the same time."

Seattle-based Boeing and its partners are still developing pricing for the Internet-in-the-sky service, Scott said, with initial rates "running about \$20 an hour, coming down to about \$10 an hour when the service ramps up."

Seattle-based Tenzing Communications Inc. has already signed deals to provide similar Internet and e-mail service to a number of foreign carriers, including Cathay Pacific Airways Ltd. in Hong Kong, Singapore Airlines Ltd. and Virgin Atlantic Airways Ltd. in London. Tenzing downplayed last week's announcement by Boeing, Chicago-based United, Atlanta-based Delta and Fort Worth, Texas-based American.

Peter Lemme, vice president of business development at Tenzing, said his company has both "a time-to-market ... and price advantage over Boeing."

Although Tenzing has yet to firm up its prices, Lemme said the cost to passengers "will be substantially less" than Connexion by Boeing. Lemme maintains that Tenzing's ability to provide service today on trans-Pacific routes is another advantage over Connexion.

But comparing the two services is like comparing "apples and oranges," Scott said. "Tenzing only provides 2.4K bit/sec. speeds" to its trans-Pacific airline customers, he said.

Lemme fired back, saying that since Boeing and its partners haven't yet secured satellite capacity over the Pacific, "that makes their data rate zero bits per second."

Alan Reiter, an analyst at

Wireless Internet & Mobile Computing in Chevy Chase, Md., called the Connexion service "a real winner and a no-brainer."

"Twenty dollars an hour is far less than what it costs to make just a satellite phone call today," Reiter said. But, he added, "this is the kind of service where the devil is in the details ... and United has a hard time getting its laptop power ports to work."

Connexion by Boeing is owned and operated by a joint venture created by Boeing and its three airline partners, with each company sharing in revenues. Scott declined to detail the terms of the revenue-sharing agreement.

Boeing, which announced the Connexion service in April last year, predicted at the time that 10-year worldwide revenue from broadband airborne Internet services could hit \$70 billion. ▀

Internet in the Air

American, Delta and United plan to deliver broadband Internet service to 1,500 aircraft starting in the second half of next year in partnership with Boeing. The service:

► Provides raw download speeds of 20M bit/sec. and uploads of 1M to 1.5M bit/sec., but partners set guaranteed minimum connection to individual passengers at 56K bit/sec.

► Will be offered on domestic and trans-Atlantic routes; no date set for the start of trans-Pacific service.

► Will be priced initially at \$20 per hour, then \$10 per hour as usage picks up.

► Competes with rival Tenzing, which has deals with Virgin Atlantic, Singapore Airlines and Cathay Pacific.

Certicom Launches Data Encryptor for Palm Products

New technology provides security for enterprise apps

BY JAIKUMAR VIJAYAN

Security vendor Certicom Inc. this week will launch a data encryptor for Palm Inc. handheld computers that addresses a growing need in the mobile market, users and analysts said.

The technology, called MovianCrypt, employs 128-bit advanced encryption standards to protect information on handheld devices, according to the Hayward, Calif.-based vendor.

The technology works with all Palm devices running Palm OS Version 3.0 and above and requires little effort by users once it has been installed, according to Tracy Grover, a Certicom product manager.

The technology addresses a crucial need in the mobile

marketplace, said Stacey Wu, an analyst at Mobile Insights Inc., a consultancy in Mountain View, Calif.

Handhelds such as Palm's that were once used for general-purpose productivity applications are being increasingly used in core enterprise-level mobile applications that require increased levels of security, Wu said. The security technologies that currently come integrated with such devices are inadequate for this purpose, she added.

Password Log-in

MovianCrypt implements a password-based log-in system. The password unlocks a key that decrypts data as it's being accessed and encrypts data as it's being stored. Both custom and standard applications, such as the address book and memo pad, can be secured in this manner.

The product runs on 98KB

of storage memory and about 8KB of dynamic memory and uses idle-CPU time to encrypt and decrypt data.

The overall result is a security technology that doesn't affect performance or hog the relatively meager CPU and memory resources of handheld devices, Wu said.

"The other benefit is that it does not impose too much of a responsibility [to encrypt or decrypt data] on the end user," she added.

The Department of Psychiatry at the Sacramento-based University of California, Davis, Medical Center is beta-testing MovianCrypt for a project involving 40 Palm IIIx handhelds.

Physicians are using the handhelds to type notes about patients and to share patient care information. With MovianCrypt, it is possible to do so in a secure fashion and with very little impact on performance, said John Luo, director of psychiatric informatics at the university. ▀

Airbus Has Its Own Net Plan

One day after the Boeing announcement, European airplane manufacturer Airbus Industrie revealed plans to invest in Tenzing and to use the vendor's wireless communications technology to provide e-mail and Internet access to airline passengers.

Blagnac Cedex, France-based Airbus said it is buying a 30% interest in Tenzing for about \$44 million. Tenzing will also become the aircraft maker's preferred supplier for in-flight communications capabilities. The two companies said they will start installing the

technology in some Airbus planes during the next few months.

According to Alan Reiter, an analyst at Wireless Internet & Mobile Computing in Chevy Chase, Md., the Airbus/Tenzing deal "evens the playing field" in the wake of Boeing's broadband announcement.

But since the in-flight Internet business is so new, "it's premature to talk about market leaders," he added. "The advantage will go to the company that signs up the most airlines."

- Bob Brewin

MORE THIS ISSUE

For more wireless coverage, see page 20.

Windows 2000 ADVANTAGE

The Web Magazine for IT Leaders Implementing Windows 2000 and Windows NT with Compaq Services and Solutions

Online this week:

POINT OF VIEW

Agility

As applied to the computer industry, agility takes on a new meaning. Compaq and Microsoft are constantly striving to embody that concept. www.windows2000advantage.com/pov/03-19-01_agility.asp

TECH EDGE

The alleged Active Directory security flaw

The security flaw only occurs when documented procedures are not followed. www.windows2000advantage.com/tech_edge/04-16-01_alleged_flaw.asp

Q & A

Chris Koontz shares his experience

Chris Koontz is E-business Practice manager, Parks & Company, a consulting firm. www.windows2000advantage.com/qa/04-23-01_koontz.asp

COLUMNS

With .NET every application can function as a Web service

The Common Language Runtime feature of .NET lets you create Web services in many languages. www.windows2000advantage.com/columns/05-21-01_net.asp

CASE STUDIES

BT Ignite Auction Services

Fueled by Microsoft Windows 2000 and Compaq ProLiant servers, BT Ignite Auction Services, easily builds online auctions. www.windows2000advantage.com/case_studies/06-04-01_auction.asp

POINT OF VIEW >

Compaq, Microsoft combine efforts to facilitate Windows 2000 Server, Advanced Server implementations

For customers upgrading to Microsoft Windows 2000 Server or Windows 2000 Advanced Server, Microsoft and Compaq are working together to help ensure that the experience is a positive one.

For the full story, visit: www.windows2000advantage.com/pov/06-11-01_advanced_server.asp

Q&A >

Leonard DiCostanzo blends business and technology solutions for small and medium business clients

Leonard DiCostanzo is president and founder of Turnkey Computer Systems. During a recent interview with Windows 2000 Advantage executive editor Bruce Hoard, he discussed topics that are essential to the success of small and medium size firms.

For the full story, visit: www.windows2000advantage.com/qa/06-11-01_dicostanzo.asp

MOMENTUM SERIES >

Study says Compaq increases leading industry-standard server customer satisfaction rating for second consecutive quarter; Dell fades

According to a new study from Technology Business Research, Compaq has increased its industry-standard server customer satisfaction ratings for the second successive quarter.

For the full story, visit: www.windows2000advantage.com/news/05-28-01_industry_servers.asp

MOMENTUM SERIES>

Dedicated appliance servers provide targeted functionality

While it's no secret that Microsoft Windows 2000's Active Directory has been a boon in helping users simplify network administration, users are also finding the directory is a godsend when it comes to enhancing their security.

Prominent among Active Directory's security capabilities is the Group Policy function, which makes it possible to exert a far more detailed level of control over what users can and cannot do on the network than was ever possible with Windows NT 4.0.

Users also report that virtual private networks (VPNs) are simpler to set up and manage with Active Directory, and that even simple dial-in connections are more reliable than they were with NT 4.0. In addition, users are beginning to explore integration strategies that would tie Active Directory in with advanced security technologies such as Public Key Infrastructure (PKI), smart cards, biometrics and authorization systems.

Michael Perez is an NT administrator at Townsend Analytics, a software developer in Chicago that created and runs Archipelago, an automated stock trading platform. The platform, used to enable the buying and selling of shares in the major stock exchanges, consists of about 900 servers, most of which are Compaq ProLiant models. They run a mix of Windows 2000 Server and Professional, NT 4.0 Server and NT Workstation, configured as a server.

For the full story, visit: www.windows2000advantage.com/features/06-04-01_security_features.asp

QUOTE OF THE WEEK >

"Small and medium enterprise firms really need to see the value of technology and make sure they educate their people enough to use the technology tools on hand."

— Leonard DiCostanzo
president
Turnkey Computer Systems

What is Windows 2000 Advantage?

The mission of Windows 2000 Advantage is to become your primary source of timely, useful information for planning and implementing Microsoft Windows 2000 on Compaq solutions and services.

Windows 2000 Advantage is a Web-only magazine because that lets us

bring you, the IT leader, great stories that apply to your day-to-day work. We'll keep you up to date with a weekly e-mail alert so you don't miss a thing.

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keeping their companies on top of the latest and best solutions Microsoft and Compaq have to offer. Toward that goal, we offer a wide range of stories including case studies, columns and news to provide you with information you can't find anywhere else.

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BRIEFS

iMode Users Warned
Of Malicious E-Mail

NTT DoCoMo Inc., Japan's top wireless carrier, last week warned customers of its iMode wireless Internet service about malicious e-mail messages that can use special commands to freeze the screens of their mobile phones, dial an emergency number automatically or make calls to large numbers of people. The Tokyo-based company said that although users hadn't yet reported any damage resulting from the malicious e-mail, it was considering legal action against the senders because of the inconvenience to customers.

Corporate Network
Searching Apps Bow

AltaVista Co. last week announced its AV Enterprise Search application, designed to give users access to a wider array of data within their companies' networks. The software will work inside corporate firewalls, allowing workers to get more information faster, according to AltaVista. The Palo Alto, Calif.-based company also announced AV Personal Search software, which gives individual corporate users similar search capabilities on the hard drives of their desktop computers.

Short Takes

IBM last week announced a pair of network-attached storage devices aimed at filling out the company's line of storage products so it can compete on a wider scale with rivals such as EMC CORP. and HEWLETT-PACKARD CO. . . . Former FEDEX CORP. CIO Dennis Jones was promoted to president at business-to-business software vendor COMMERCE ONE INC. last week. Jones had joined Pleasanton, Calif.-based Commerce One as chief operating officer and vice chairman in April, a year after retiring from Memphis-based FedEx. He will replace Robert Kimmitt, who is leaving to join New York-based AOL TIME WARNER INC.

Microsoft Touts .Net
To Wary Developers

Web services aren't yet popular, but users will have to migrate, say analysts

BY LEE COPELAND GLADWIN

DEVELOPERS CAN grab the latest Web development tools from Microsoft Corp. at the TechEd 2001 conference this week, but the new software may quickly become shelfware as companies defer their moves to Web services.

Microsoft plans to give attendees preview copies of the second beta version of its long-awaited Visual Studio.Net and .Net framework software at the annual event in Atlanta.

In addition to supplying previews of its tools, the company also needs to persuade end users to embrace its .Net Web services framework.

"Web services is not something we're planning to do," said Evelyn Folliot, CIO at RadioShack Corp. The Fort Worth, Texas-based electronics retailer is happy with its investments in Microsoft technologies, but it doesn't have an interest in swapping services over the Web, she said.

Introduced in June of last year, Microsoft's .Net initiative consists of a middleware layer that will allow Windows component-based applications to swap functionality and process requests from applications built using other programming languages and other operating systems.

Web Services Unsold

Although rivals IBM and Sun Microsystems Inc. are also pushing Web services, a number of users said they still aren't sold.

For example, Navimedix Inc. considered switching to a Java-based environment last year, said Chuck Grindel, software engineer at the Boston-based

online health insurance claims processor.

Navimedix ultimately opted to stay with Microsoft because of its existing investments in the vendor's servers, databases and custom-developed applications. But the company has no plans to build .Net applications.

"We didn't see anything compelling enough [in Java] to justify the switch," said Grindel. "We don't do anything .Net yet; we're using the older

technology, but the platform is performing."

But like it or not, Microsoft users will have to migrate existing code, said analysts.

"Going from Visual Basic to Visual Studio.Net is not as difficult as going from Visual Basic to Java," said Mark Driver,

an analyst at Gartner Inc. in Stamford, Conn., who estimated that 40% of Windows-based Web applications will need to be migrated.

To shore up support for .Net, Microsoft will need to address the con-

cerns of developers, said Evan Quinn, an analyst at Hurwitz Group Inc. in New York, who

AT A GLANCE

Microsoft will provide attendees of this week's TechEd 2001 conference with preview copies of its .Net platform and Beta Version 2 of its Visual Studio.Net tool set.

Continued from page 1

UDDI

"Microsoft is aware that security is an issue," said Darryl Plummer, an analyst at Stamford, Conn.-based Gartner Inc. "As you open things up, you open up the door for security holes. They're trying to come up to speed in a public forum, and if large controls were in place, it wouldn't take off."

Microsoft officials said controls for vetting companies that register in the UDDI directory would be discussed at a private conference for the registry's adviser group in Atlanta this week.

But beyond the challenge of vetting registrants, the sponsors of the UDDI directory also appear to be facing another problem: uninformed directory members.

Markle Stuckey Hardesty & Bott is listed in the UDDI directory. But David Hardesty, vice president of the Larkspur, Calif.-based e-commerce ac-

counting firm, said he has no idea what the directory is and has no plans to introduce Web services at his company.

"I have no recollection of registering," said Hardesty. "We haven't used it, and we don't know anything about it, but that's not to say that we didn't sign up for it. There are lots of things out there on the Web, but you just can't remember everything."

Bob Gill, owner of Shrimp Landing, a seafood wholesaler in Crystal River, Fla., said he agreed to register after responding to an e-mail solicitation from IBM.

said, ".Net is still a little bit nebulous right now."

"They have to make the programmers feel that this technology is cool and that there is a commercial upside for their career in using it," he said.

Microsoft is expected to showcase two of its new Visual Studio.Net tools this week.

Visual Studio.Net Enterprise Architect (VSEA) provides conceptual, logical and physical modeling tools for mapping out the business requirements of .Net applications.

Visual Studio.Net Enterprise Developer (VSED) contains frameworks and templates for creating .Net applications, as well as a version-control and data management utility.

Both VSEA and VSED offer software and database testing tools, the first version of Microsoft's new object-oriented language C# (pronounced C sharp) and the Common Language Runtime for .Net.

Visual Studio.Net and the .Net platform are expected to ship by year's end. ■

But Gill said he doesn't see himself using or offering Web services from the company's one-page Web site at www.gminet.com/shrimp.

"I'm sticking my neck into an area for which I know nothing about," said Gill. "First, I need to get my site up and running. Then I'll think about it."

It may take years before the UDDI has much impact, but its proponents will need to demonstrate that it has value to end-user companies and not just technology vendors, said Ted Schadler, an analyst at Cambridge, Mass.-based Forrester Research Inc. ■

False Directions

Microsoft and IBM's UDDI directory includes numerous fake listings, such as the following:

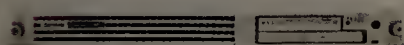
CONTACT	COMPANY	WEB SERVICE
John McCloud	Loud Speakers Inc.	Juju beads to ward off evil spirits
D J	Stone Consulting	IT consulting services
Art Garfunkel	Art's Bicycle Sales & Repair	Not listed

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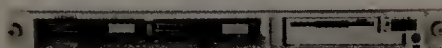
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QuickAccess Code: N7X711-1735X

Intel Pentium III processor 1.00GHz

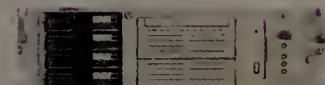
18.2GB 10,000 rpm Ultra SCSI 3 pluggable hard drive³

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Execs: Building Consensus Is Biggest B2B Challenge

Chemical industry e-business leaders say colleagues resist changing business processes

BY MICHAEL MEEHAN
PHILADELPHIA

E-BUSINESS executives from some of the world's largest chemical companies who gathered at a conference last week said they spend much of their time convincing hesitant colleagues that changing business as usual isn't a painful process.

Lisa Boothe, global e-business leader at Du Pont Co. in Wilmington, Del., said her company has spent much of the past year developing a Web site for its corporate customers. Du Pont plans to migrate all of its fabric, chemical and biotechnology divisions to similar business-to-business sites by the end of the year.

Yet Boothe said she still hasn't been able to build consensus among the divisions on common B2B infrastructure and portal technologies.

"We have to influence, not dictate," she said at the the International Quality & Productivity Center Chemicals Online conference here. "We have to get these different business units to want to change, or it won't work."

“

We have to get these different business units to want to change, or it won't work.

LISA BOOTHE, GLOBAL
E-BUSINESS LEADER, DU PONT

Tom Fannon, director of e-commerce at Ashland Distribution Co., a polymer and chemicals subsidiary of Covington, Ky.-based Ashland Inc., said some divisions in his company have achieved online sales as high as 28% of total sales, while others have barely made a dent.

The Dublin, Ohio-based unit just unveiled a corporate portal called the Ashland Distribution Commerce Center that provides catalogs and ordering capabilities for all of its divisions, but it wasn't an easy thing to build, said Fannon.

"Just those four words at the

E-Business Tips

A few suggestions from Bill Gaughan, vice president of e-business and IT at Bayer:

■ Feel free to provide direction to your customers on **standards, connectivity and strategy**. Many of their back-office systems won't be able to process all the relevant data.

■ If possible, use **XML to execute transactions** in your back-office systems and then use that XML standard externally.

■ Start with small projects and **let success sell growth** throughout your company.

top of the page, it took everyone about three months to agree on those," he said.

Bill Gaughan, vice president for e-business and IT at pharmaceuticals and chemicals company Bayer Corp. in Pittsburgh, said Bayer AG's global CEO in Germany set the directive to migrate sales to online channels last year. The current state of the economy makes it difficult to fund major projects, however.

"You're not going to get that million dollars for that supply chain connectivity software you want, so you have to pick more limited projects," Gaughan said.

But that's not necessarily a bad thing, he added. "Building minimum functionality has proven more cost-effective

than full implementations," Gaughan said.

Different divisions at Bayer will ultimately be expected to share similar transaction and back-end standards, but they will probably differ on how they collaborate with their various business partners, said Gaughan.

E-business divisions need to be partners with other units, argued Allen Jezouit, director of e-business at gases and chemicals distributor Praxair Technologies Inc. in Danbury, Conn.

Jezouit's group is brought in whenever another division is looking to sell via an online auction or is buying new technology. "What we want to avoid is doing redundant things," he said.

Jezouit said everyone in his group was brought in from the firm's various business units so they would have contacts within those units. ▀

MOREONLINE

For more on B2B issues, visit our Web site.
www.computerworld.com/ecommerce

3Com Aims to Please Users With New Switches, Pricing

Products called 'fairly innovative,' easier to configure

BY JAMES COPE

Despite predictions that go-liaths like Cisco Systems Inc. and Nortel Networks Corp. will ultimately control the network equipment market, some 3Com Corp. customers remain relatively optimistic about their preferred vendor's staying power.

And 3Com is trying to keep them that way.

Last week, the Santa Clara-Calif.-based firm introduced three new Ethernet switches, including a higher-density Ethernet 10/100M bit/sec. SuperStack 3 Switch 4300 with 48

ports; a SuperStack 3 Switch 4400 that can detect and switch network traffic based on type of application; and a high-performance Layer 3 Switch 4005, which handles up to 12 Gigabit Ethernet ports.

Graham Ward, director of network services at the Boston University School of Medicine, said he's "strongly considering the 3Com 4000 Series switches for further floor-switch upgrades."

Introducing the 4400 is a positive move for 3Com, because at a very basic level, it can distinguish network traffic at Layer 4 by application, said Joel Conover, an analyst at Current Analysis Inc. in Sterling, Va. That capability is key for managing quality of service for applications used by accounting departments and for

3Com's own voice over IP telephone system, he said.

Ethernet switch products from Cisco, Enterasys Networks Inc., Extreme Networks Inc. and Foundry Networks Inc. have similar capabilities. But Conover noted that unlike 3Com, those vendors also offer switches with built-in routing capabilities.

Ed Krusinski, a communications specialist at the National Cancer Institute in Frederick, Md., said he has been testing the 3Com SuperStack 3 Switch 4300 and is interested in it because of the increased number of ports. The institute uses 3Com equipment.

Like Ward, Krusinski manages a network in a campus environment.

"We have a lot of scientists doing lots of research. We have every type

of machine and a lot of different applications," Krusinski said. "For me, [3Com is] making things a little simpler than, say, a Cisco box. They're easier to configure; that's their strongest point."

Conover said that since 3Com's restructuring and its announcement last year of a new focus on small and mid-size businesses, customers may still be nervous about the company's long-term plans.

But, he said, "in general, the new switch products are fairly innovative and offer levels of local-area network performance required by many enterprises at a pretty competitive price point."

Conover said the price point is generally 25% less than those of similar products from competitors. ▀

JUST THE FACTS

Price Tags

The new 3Com Ethernet switches cost:

■ SuperStack 3 Switch 4400: \$1,750 - Application-aware 10/100M bit/sec. Ethernet (Layer 4)

■ SuperStack 3 Switch 4300: \$2,995 - 48-port workgroup 10/100M bit/sec. Ethernet (Layer 3)

■ 3Com Switch 4005: \$9,995 - Modular Switch - scalable from nine to 96 10/100M bit/sec. ports and 1 to 12G bit/sec. ports (Layer 3)



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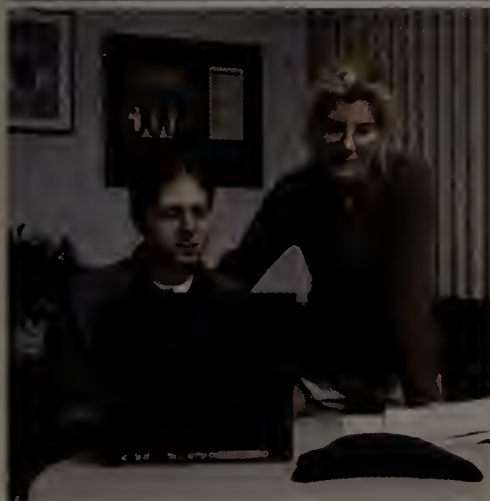
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SAP Pushes CRM Apps at Conference

Some say company may have marketing advantage because of large ERP following

BY MARC L. SONGINI
ORLANDO

TOUTING BIG-NAME clients like New York-based cigarette maker Philip Morris U.S.A. and FAW-Volkswagen Automotive Co. in China, SAP AG used its Sapphire 2001 user conference here last week to try to prove that it's a viable vendor of customer relationship management (CRM) applications.

Among a variety of product announcements at the conference, SAP detailed a new version of its mySAP CRM software that's due for release dur-

ing the third quarter. New features will include a billing tool that can handle order-to-cash functions and the ability to integrate the CRM technology with supply chain applications from SAP or rival vendors.

Gaining Attention

But despite SAP's efforts, its CRM offering still seems to be something of a well-kept secret compared with its flagship enterprise resource planning (ERP) software, said Brian Bingham, an analyst at Framingham, Mass.-based market research firm IDC.

"They are a major player [in

CRM] but not recognized as one because of their legacy in ERP," he said.

SAP is still overshadowed by the market leader, Siebel Systems Inc. in San Mateo, Calif., Bingham said. But, he added, SAP does have the benefit of a huge user base for its ERP applications and has enlisted CRM sales help from the likes of IBM.

Next month, Irving, Texas-based consumer products manufacturer Kimberly-Clark Corp. plans to go live with an online product catalog based on mySAP CRM, said Ladd Nichols, director of global strategic information systems. The catalog will allow users to perform general e-business functions, such as procurement, while also providing ac-

cess to educational materials and other documentation.

"We were probably the biggest detractors of SAP," said Nichols, looking back to the start of the multimillion-dollar project three years ago. Unlike many large manufacturers, he noted, Kimberly-Clark didn't use SAP R/3 to run its back-office operations. Nevertheless, Nichols said, he decided SAP had the most complete vision for Internet-based CRM functionality.

The company has also installed an R/3 system for the sole purpose of connecting to the online catalog and formatting data for use by the CRM applications.

Osram Sylvania, a Danvers, Mass.-based maker of lighting products and a longtime R/3 user, began running mySAP CRM in October to power its online catalog, as well as for sales order processing, procurement and other functions.

Mehrdad Laghaeian, CIO at the company's Osram GmbH subsidiary, said he plans to in-

JUST THE FACTS

Coming Next Quarter

SAP AG's mySAP CRM 3.0, which will be available next quarter, includes the following enhancements:

- A billing tool for order-to-cash processing.
- The ability to attach to supply-chain management applications to feed customer data directly into the procurement process.
- The ability for companies to consolidate all of their customer data into one application for analysis.

stall the Version 3.0 upgrade announced yesterday and is now considering ways to exploit new features such as call center and mobile sales and service capabilities.

Laghaeian also said he wants to use mySAP CRM to support collaborative commerce and supply chain planning processes with Osram Sylvania's customers and suppliers. ▀

Continued from page 1

Flooding

underscored the importance of standardizing on a data format to facilitate patient care, especially in times of crisis, he noted.

At the Harris County government offices in Houston, five of 26 buildings were knocked completely off-line by floodwaters, which ravaged underground utility and communications tunnels, destroying wiring, phone cables and other systems.

"We had the perfect storm in the tunnel systems," said Steven Jennings, executive director of the county's central technology center. What was learned, he said, is that the traditional method of placing data centers in the bowels of buildings is dangerous because it can leave critical systems vulnerable.

Instead, data centers and communications equipment hubs need to be located on upper floors, isolated from flood-



FLOODWATERS from Tropical Storm Allison knocked out IT departments throughout Houston last week.

ing and other problems. Future government buildings, including several currently on architectural drawing boards, will incorporate such changes, Jennings said.

"You train for scenarios, and what you find out is that Mother Nature has a curve ball," he said.

"The storm and flooding [were] probably more extensive than we've ever had in Houston," said Tim Tindle, a senior vice president of strategic planning at Solid Systems Inc., a Houston-based managed hosting provider and systems integration firm.

"Companies that were pre-

pared fared pretty well for the most part," he said. But it was the little details that often caused unforeseen problems -- although many companies had emergency power generators on hand, many of those generators were left wet and useless because they were in basements, which were among the first areas to flood.

Some companies had installed generators on upper floors to protect them from flooding. But that led to a different problem, Tindle said. "Generators have run out of fuel because [the businesses] hadn't contracted with anyone for refueling," he said.

A lot of the computer and data communications equipment in basements of corporate buildings were severely damaged by the drenching rains, said Tindle. "Those buildings got hit, and it really took down a ton of data communications infrastructure," he said.

Tom Smith, a senior vice president of IT at the Houston headquarters of trash hauler Waste Management Inc., said

You train for scenarios, and what you find out is that Mother Nature has a curve ball.

STEVEN JENNINGS,
EXECUTIVE DIRECTOR,
HARRIS COUNTY, TEXAS,
CENTRAL TECHNOLOGY CENTER

that although his company's facility didn't experience flooding, some areas lost electricity for about 48 hours, and backup generators had to be used.

The darkened hallways and stairways taught IT staffers a simple lesson, he said.

"We should probably have more flashlights on hand," Smith said. "It's the little things you don't think much about." ▀

California Hack Points to Possible Surveillance Threat

Power grid unaffected; perps unidentified

BY DAN VERTON

THIS MONTH'S revelation that hackers broke into computer systems owned by California's primary electric power grid operator highlights a growing fear on the part of federal officials that such intrusions could be part of long-term intelligence-gathering activities. The intrusion, which occurred this spring, remained undetected for 17 days.

The intent of the network break-in at the Folsom, Calif.-based California Independent System Operator (Cal-ISO) wasn't clear. But security analysts said the lack of apparent damage indicates that the break-in was conducted either by an unsophisticated group of hackers or by attackers whose intent was to collect information about the systems and to document vulnerabilities.

The incident, which took place between April 25 and May 11, is being investigated by the FBI. Although Cal-ISO officials said they managed to trace the attack to a system in China, experts said current security technology can't distinguish the noise of so-called script kiddies from the more nefarious hacking sponsored by governments or terrorists.

"You still don't know if you're dealing with a kid, organized crime, an intelligence service or an economic competitor," said Frank Cilluffo, a senior policy analyst at the Center for Strategic and International Studies in Washington.

However, government officials and security researchers have documented a significant increase in Internet probes and server scans this year. A large percentage of the probes could be part of an organized effort

by foreign intelligence services and other groups to map potential security holes in critical systems, officials said.

A report released last month by the Defense Science Board, an industry and academic group convened by the U.S. Department of Defense, confirmed that the current state of the art in cyberattacks includes preliminary intrusions into various critical infrastructure networks.

The primary threat to the most critical networks in the U.S. comes from countries that are actively mapping the Internet for vulnerabilities, said Richard Clarke, national coordinator

for security, infrastructure protection and counterterrorism at the National Security Council. "And they know more about our national architecture than many of us do," Clarke said last month at an Internet security conference in Washington.

Cal-ISO is a nonprofit company that was created by California's government to run the bulk of the state's electricity grid. Its systems are tightly integrated with the major power distribution network serving the entire western U.S. Grids such as Cal-ISO's are managed using highly proprietary technology known as Supervisory Control and Data Acquisition (SCADA) systems.

Potential vulnerabilities associated with SCADA systems,

particularly those used to manage the flow of electricity, have been known for years and were documented in a 1996 report by a presidential commission.

But the available information about the vulnerabilities isn't detailed enough for hackers to easily take advantage of, analysts said.

"There's a tremendous learning curve for [infiltrating] SCADA systems," said Tim Belcher, chief technology officer at Riptech Inc., a security consulting firm in Alexandria, Va. "This leads me to believe that [the Cal-ISO break-in] wasn't an extremely sophisticated attack, because with 17 days' worth of access [to the systems there], I know what we could have done."

Cal-ISO spokesman Greg

[Foreign countries] know more about our national architecture than many of us do.

**RICHARD CLARKE,
NATIONAL COORDINATOR
FOR SECURITY, INFRASTRUCTURE
PROTECTION AND COUNTER-
TERRORISM AT THE NSC**

Fishman also downplayed the incident. The intruders "never really got close at all to our operational systems that run the grid," he said. But the incident "was an attempt to breach our security, and we take that very seriously," he added. "We are in the midst of an investigation with the FBI." ▀

H-1B 'Premium Processing' Plan Draws Mixed Reviews

Critics say price tag will create classes of haves, have-nots

BY JULEKHA DASH

A new government program that, for an extra fee, would speed up the process for approving H-1B visas for foreign workers is drawing mixed reviews among those involved in immigration issues.

Trying to clear the backlog of pending foreign high-tech worker visas, the U.S. Immigration and Naturalization Service (INS) on July 30 will initiate a premium service that will process applications within 15 days rather than 60 to 90 days for an additional fee of \$1,000.

But while labor attorneys, companies and H-1B holders

applauded efforts to shorten visa processing times, some questioned whether the approach is fair to smaller firms.

"A thousand dollars goes a long way towards our payroll," said Jake Karrfalt, CEO of Alternative System Concepts Inc., an eight-person software company in Windham, N.H.

While the \$1,000 fee may be a "drop in the bucket" for multinational corporations, it might be too much for small firms, said Vic Goel, an immigration attorney at Goel & Associates in Washington. "You're creating a class of haves and have-nots," he said. Goel also said he worries that the INS will request additional information as a "delay tactic" rather than approve petitions.

But Eyleen Schmidt, an INS spokeswoman, said the agency wouldn't ask for unnecessary

information, because it "only gives INS more work." The goal is to eliminate the backlog within five years, which would then make premium processing obsolete, she said.

Applicants who use the agency's new service will have a dedicated phone number and e-mail address to check the status of their petitions, allowing them to respond quickly to

requests for more information, Schmidt added.

The INS plans to use the fees to hire 450 more staffers starting in fiscal 2002, which begins in October. Firms filing H-1B petitions before July 30 whose cases are still pending at that time will also be able to use the service, said Schmidt. The INS said it would refund the \$1,000 fee to applicants whose petitions aren't completed within 15 days.

"If the INS needs money and can guarantee it will be used for faster processing, then it should increase [service] across the board," not just for applicants who pay the \$1,000 fee, said H-1B holder Murali Devarakonda, a senior consultant at ShaktiSoft Inc., an e-commerce consulting firm in Fremont, Calif.

If the INS shortens H-1B visa processing times, more employers will likely file for H-1B petitions, said Michael McGinley, Eastern recruiting manager at Predictive Systems Inc., a New York-based networking consulting and integration firm. ▀

Speedy Service

Regular vs. premium processing of H-1B visas by the INS:

REGULAR PROCESSING:

- ▶ Takes 60 to 90 days
- ▶ Costs \$1,100

PREMIUM PROCESSING:

- ▶ Takes 15 days to accept, deny, request more information or provide notice of investigation for fraud.
- ▶ Costs \$1,000 in addition to the \$1,100 fee.
- ▶ The extra fee is per petition, not per worker: A firm pays no more than \$1,000, regardless of how many H-1B holders it wants to hire.

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Microsoft Application Center 2000

Web server farms have always been known for providing high application availability in a cost-efficient manner. Unfortunately, in the past they have also been known for manageability headaches. But no more: Microsoft Application Center 2000 now makes managing Web applications and groups of Web servers as simple as managing a single server.

Part of the flexible Microsoft .NET Enterprise Server family, Application Center 2000 is built to be the heart of a "scale-out" infrastructure model. "Scaling out" is a flexible approach to scalability that involves deploying Web applications across multiple servers to distribute and handle the workload.

Application Center 2000 makes scaling out easier, with unified Web application and server-farm management that simplifies tasks

MARKET FACT

"The scalability benefits offered by Application Center made it possible to migrate to a distributed Windows platform. Application Center provides on-demand capacity and a powerful tool for managing Windows 2000-based Web server farms."

Mike Updell, Product Director, Server Management, IBM Lotus

like cluster management and application deployment. Plus, it makes it easy to achieve capacity on demand through automatic replication of applications when you add servers or make changes to existing applications. But simplicity is not all you get:

Application Center 2000 offers increased uptime through dynamic load balancing and by having no single point of failure.

In sum, Application Center 2000 removes the hassle of managing multiple servers separately, while providing the availability and cost-efficiency of a "scale-out" model. Find out how to keep the odds in your favor: visit microsoft.com/applicationcenter Software for the Age of the Internet.

Microsoft

Guidelines Posed for Wireless Handsets

BY MATT HAMBLIN

Leading makers of Global System for Mobile Communications (GSM) phones and oper-

ators of wireless networks last week announced guidelines to provide more consistent handset features and services in

next-generation devices.

Members of the new Mobile Services Initiative group include the world's three largest

handset makers: Ericsson Inc., Motorola Inc. and Nokia Corp. Operators supporting the effort include AT&T Wireless and Voicestream Wireless, which depend on GSM and its next-generation network, General

Packet Radio Services (GPRS).

Part of the motivation behind the effort, which was coordinated by the GSM Association in London, is to move beyond perceived usability problems with Wireless Application Protocol (WAP) phones and to enhance wireless browsing of the Web, said Mark Smith, the association's director of communications.

In its guidelines, the association said it also wants to "replicate the success" of Tokyo-based NTT DoCoMo Inc.'s iMode service, which is known for its ease of use.

Analysts said any set of guidelines that will provide consistency for users is welcome. "GPRS phone makers and operators definitely need more continuity as new services roll out," said Peter Firstbrook, an analyst at Meta Group Inc. in Stamford, Conn.

Today, users can't count on phones having consistent displays — the size of the display and the number of lines of text or characters usually varies from model to model — much less consistent buttons for functionality, he said. For example, Firstbrook said his Ericsson phone has a button marked "No" next to a "Yes" button, which is used to turn the phone on and off. Other phones have "OK" buttons for powering on or off, and there are other variations as well.

One principle benefit of the guidelines could be to help application developers who have found the current version of WAP difficult to work on, analysts and members of the association said. Smith stressed that the Mobile Services Initiative doesn't mean the end of WAP and will instead serve as a bridge between WAP 1.2, which is used today, and WAP 2.0, to be released next year.

Compared with Europe, where GSM is widely used, the U.S. has relatively few GSM users. But GSM/GPRS use will grow substantially in the U.S., accounting for roughly half of all wireless users by 2003, Firstbrook said. That would include Voicestream, AT&T Wireless and Cingular Wireless users, he said. ▀

Is Your Company's IT Literature Lost on the Internet?

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J.D. Edwards Focuses On Collaboration

Announces supply-chain integration, midrange support at annual conference

BY MARC L. SONGINI

STRUGGLING business applications vendor J.D. Edwards & Co. focused the spotlight on collaborative commerce technology and real-time supply-chain integration at its annual user conference last week, as the company tries to position itself to reverse a continuing drop-off in software sales.

At the Focus 2001 conference in Denver, J.D. Edwards announced a set of predefined collaborative business processes based on new middleware it released earlier this year. The company also promised full technical support for the Collaborative Planning, Forecasting and Replenishment standard and detailed plans to tailor collaborative applica-

tions to midsize users.

In addition, the Denver-based firm is now offering real-time links between its supply-chain planning software and its OneWorld back-office applications. Those systems previously could exchange data only in batch mode, making it harder for users to quickly respond to supply-chain problems or changes.

The various announcements came just one month after J.D. Edwards laid off 8% of its workforce as part of what it described as a "revitalization" effort following a series of losses and management changes. But company officials remained upbeat at Focus 2001, claiming that the software vendor is on the road to recovery.

Robert McCullough, an analyst at Hurwitz Group Inc. in

Framingham, Mass., said a new management team that J.D. Edwards put in place four months ago is showing a tighter focus on specific strategies, such as the plan to target collaborative applications at the midmarket. A year ago, McCullough said, the company's business plans seemed more random.

J.D. Edwards executives ac-

knowledgeed at the conference that some of the more advanced collaborative Web technology being touted by the company is "next year's stuff," McCullough said. But the move to emphasize collaborative commerce now "will get them some awareness" with users who are interested in the idea, he added.

Not everyone is confident about the turnaround efforts at J.D. Edwards. This week's conference could be a "do-or-die" event for the company, said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Daly City, Calif. "They've really been struggling, and they're trying very hard to turn the corner," he said.

The increased commitment to midsize users is a wise strategy, Greenbaum said, describing that market as "a huge opportunity."

But the OneWorld suite hasn't caught on yet, he added. And the company's partnerships with Siebel Systems Inc. in San Mateo, Calif., for customer relationship management software and Mountain View, Calif.-based Ariba Inc. for business-to-business software haven't given it much of a boost, Greenbaum said. ▀

JUST THE FACTS

A New Focus

J.D. Edwards announced the following at its user conference:

- Advanced Planning Solutions application will be enabled to **share data with the OneWorld** flagship application in real time. Previously, the applications could share data only in batches.
- A new version of its Advanced Planning Solution for the **midmarket**, which includes collaborative forecasting, demand management and supply-chain planning.
- **Plans to ship J.D. Edwards Business Intelligence**, an application that monitors and analyzes the effect that software has on a company's business processes.

HP Increases Automation in Latest OpenView Software

Offers management that is end-to-end

BY JAIKUMAR VIJAYAN
NEW ORLEANS

Hewlett-Packard Co. last week announced new functionality for its OpenView Integrated Services Management (ISM) software, claiming it will help automate more critical operations for service providers and companies doing business over the Internet.

HP's ISM suite comprises a range of tools and services used to automate and manage key processes such as service delivery, service assurance, billing and usage. It includes

software for order entry management, service activation, service-level-agreement management, inventory management, usage mediation, billing services and a messaging bus.

The enhancements, announced at the HP OpenView Forum 2001 here, are designed to give OpenView end-to-end management functionality, said Patty Azzarello, vice president and general manager of HP's OpenView business unit. With it, users will be able to automate the entire life cycle of a transaction, from service access through service provisioning, usage monitoring, reporting and billing, she said.

"Managing IT is not about the back room anymore," Az-

zarelli said. "It is much more about managing the customer experience."

Last week's announcement builds on HP's efforts to develop management software that offers a bottom-up view of IT infrastructure as well as a top-down view. Such "closed-loop service management" technology will not only allow quick identification and diagnosis of a problem anywhere in a ser-

vice chain but will also be capable of fixing it, Azzarello said.

These capabilities are becoming increasingly important, said Ed Bilewicz, a vice president at 724 Solutions Inc., a wireless service provider in Toronto. The firm is using OpenView to manage basic functions like server, router and firewall monitoring, as well as to manage and monitor application services, Bilewicz said. ▀

Better View

Among the OpenView enhancements announced by HP:

- ▶ **HP OpenView Service Information Portal 2.0** enables service providers to offer customers a personalized view of their own network, systems, service and performance information.
- ▶ **OpenView Service Desk 4.0** manages configurations, the help desk and changes to the infrastructure.
- ▶ **OpenView Internet Services 3.5** is an enhanced version of HP's existing transaction monitoring software.
- ▶ **HP Network Node Manager 6.2** is an enhanced version of existing software that monitors the performance of networks using Cisco technology.

BRIEFS

Nokia Cuts Sales Forecast Again

Nokia Corp. last week cut its business outlook for the second time this year, warning that year-to-year revenue growth for the second quarter will be less than half of its original prediction. The Espoo, Finland-based maker of cell phones and other wireless technology also said it's currently "revisiting" sales forecasts for the second half of the year because of signs that the economic softening in the U.S. is spreading. Updated projections are due to be released in mid-July along with Nokia's second-quarter results.

Peregrine to Buy Rival Remedy Corp.

Peregrine Systems Inc., which develops a mix of asset-management and business-to-business software, last week said it has agreed to buy rival Remedy Corp. in a combined cash-and-stock deal valued at more than \$1 billion based on current share prices. San Diego-based Peregrine said the acquisition will match Remedy's base of small and midsize users with Peregrine's enterprise-level customers and give the latter group access to Mountain View, Calif.-based Remedy's line of customizable applications. Peregrine will pay about \$275 million in cash and issue 27.9 million new shares of its common stock to buy Remedy.

Short Takes

Sales and customer service software vendor **FIREPOND INC.** in Waltham, Mass., is laying off about 190 workers worldwide, or 30% of its workforce, as part of a restructuring. . . . Storage device maker **IOMEGA CORP.** has eliminated 110 manufacturing jobs at its headquarters in Roy, Utah, consolidating all of its equipment production at its facility in Penang, Malaysia. . . . Murray Hill, N.J.-based **LUCENT TECHNOLOGIES INC.**'s debt rating was formally downgraded to junk bond status by New York-based **STANDARD & POOR'S CORP.**

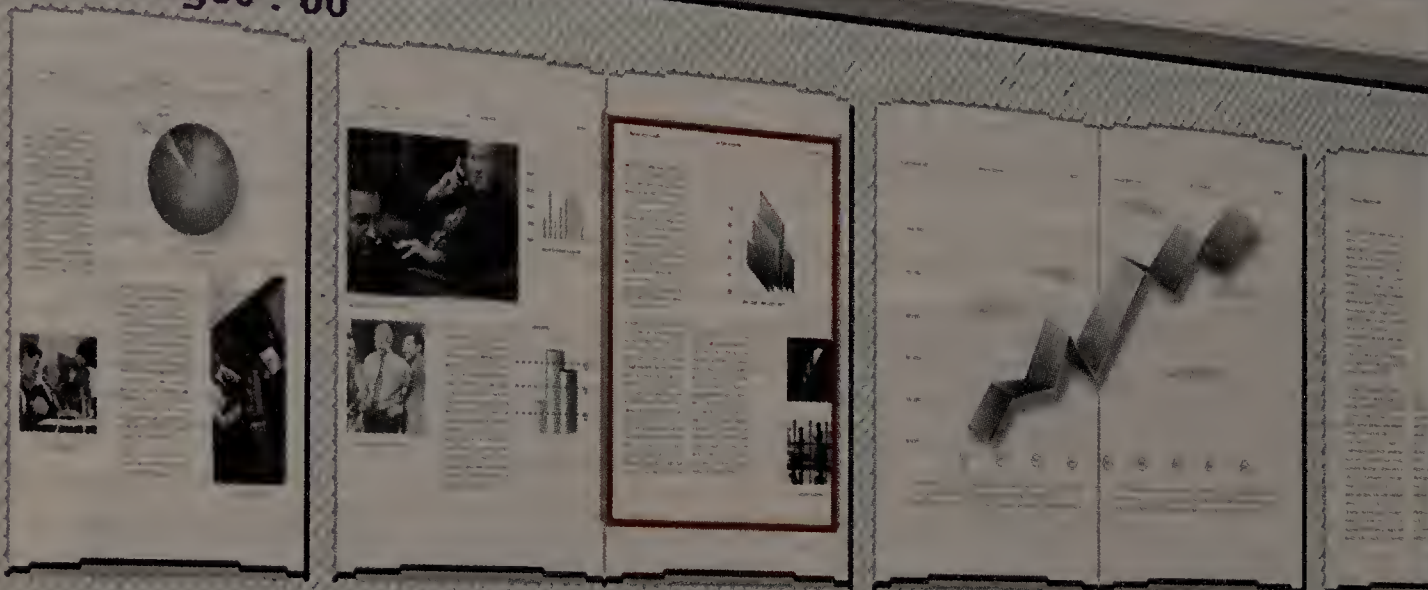
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Canon Page Composer

Document Name:

Destinations Travel Guide.doc

Total Pages : 60



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999

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MARK HALL

Kill This Piracy Plan

MICROSOFT HAS DECIDED that its stranglehold on the desktop gives it the right to force changes in user behavior. This is its first egregious, monopolistic act directed at its customers. It should be stopped.

When the company releases Windows XP, Office XP and other products, millions of end users will have to comply with Microsoft's Soviet-style diktat that forces them to use Product Activation. It's Microsoft's unilateral attempt to fight software piracy, a noble cause. An industry advocacy group, the Business Software Alliance, purports that piracy cost developers \$12 billion last year. It is a product registration method for those who don't fall under volume license agreements. If you don't register the product, it soon cripples itself. Aimed primarily at consumers, Product Activation will also affect companies that let employees buy software direct — or those that buy computers through local retail outlets.

Microsoft says that the data it collects will be protected and that there is no ongoing secret pilfering of data from your machine. It's said to be a one-time process to connect you, your software and your computer as a legal entity.

Perhaps. But it's not the privacy issue that bothers me. It's the utter pointlessness of Product Activation. Don't believe me? Here's what



MARK HALL is Computerworld's West Coast editor. You can contact him at mark_hall@computerworld.com.

Microsoft says about it: "All IP protection technologies will be cracked at some point; it is just a matter of time. The measure of success is not completely stopping software piracy. Success is more likely measured in *increased awareness* of the terms of the license agreement and *increased license compliance*." (Italics added.)

In sum, there is no real need for Microsoft to collect this information. The lofty motive is a sham. Product Activation won't do diddly

to stop piracy, but it will force you to be more aware of it. That's a good enough reason for Microsoft to have you waste your time.

It's not good enough for me. The overwhelming majority of people who use Microsoft's software abide by the end-user license agreement. So why make us change for an admittedly flawed and senseless process? Because Microsoft is acting like the bullying monopoly that it claims it isn't.

I suggest we all let our Microsoft sales contacts hear loud and clear that we don't appreciate having our time wasted for no reason. ▀

PIMM FOX

It's a Good Time To Rethink IT Training Strategy

TRAINING HAS been considered a footnote to all the action in the real economy, where competitors clash in global markets and IT systems are used to enhance customer service.

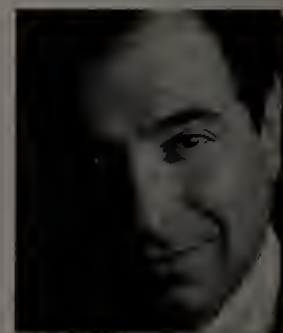
But in a telling statistic, companies are increasingly spending more money on IT training for both IT and non-IT personnel. Despite waves of layoffs and gloomy economic news, a new IDC report says IT training revenue will increase worldwide at a compound annual growth rate of 13%, from \$22 billion last year to nearly \$41 billion in 2005. This demonstrates a willingness — and the long-term thinking — of many firms to admit to the increasing complexity of and reliance on the IT systems they've installed.

But what kind of IT training makes sense?

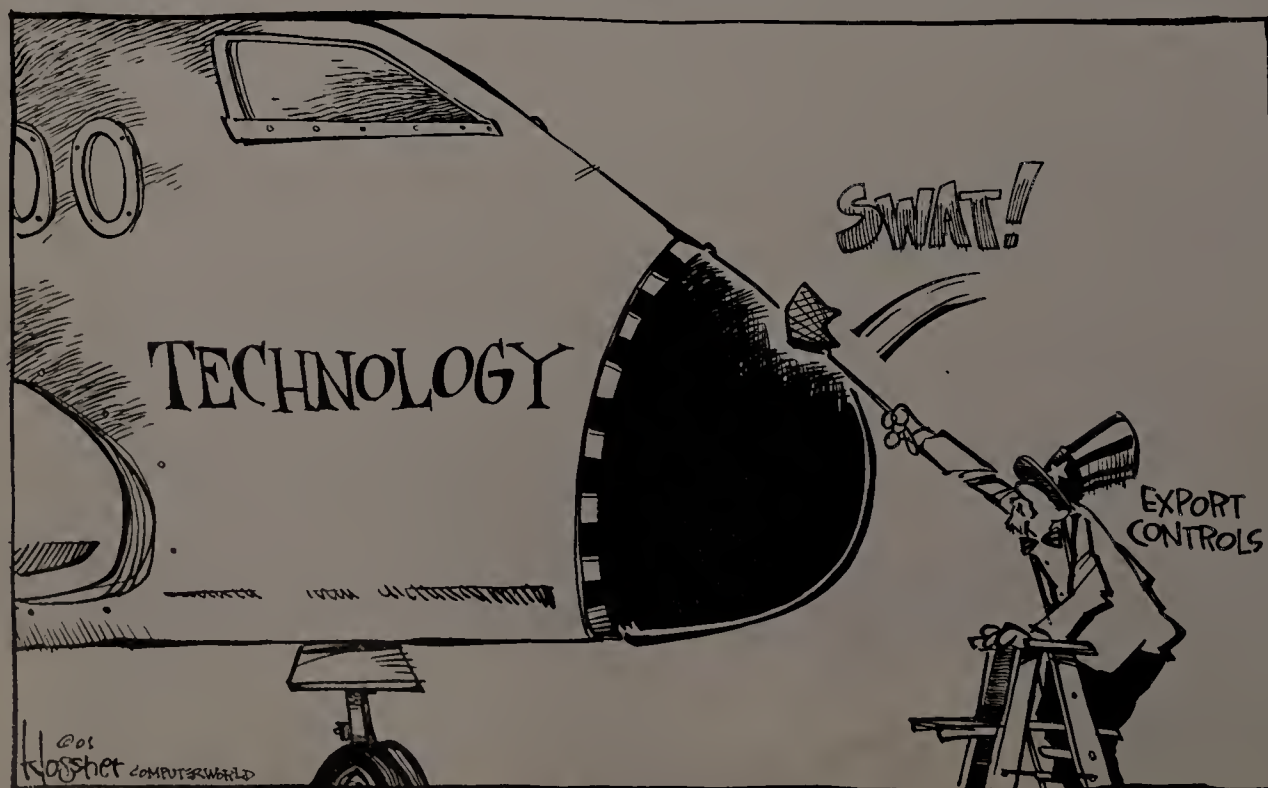
First, determine the percentage of training that focuses on internal IT functions, on one hand, and that will be coordinated, on the other hand, with business partners and customers, some of which will be much less tech-savvy than you. IT training should encompass a mixture of spontaneous, small-scale, real-time issues, such as a denial-of-service attack or a power outage, in addition to the day-to-day routine of maintaining IT. Reacting swiftly to crises is as important as fixing mundane e-mail configuration problems. Clearly, one-size-fits-all IT training won't work, because you have executives, middle managers and factory workers with different requirements and levels of expertise.

Second, don't be afraid to experiment.

Because money spent on education and training is rarely correlated to direct sales, there's a temptation to play it safe, to do only what you perceive as having been successful in the past. This may satisfy any training mandate, but it won't lead to fundamental improvements in your organization's level of IT expertise. When was the last time you simulated a breakdown in IT op-



PIMM FOX is Computerworld's West Coast bureau chief. Contact him at pimm_fox@computerworld.com.



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Bill Gates

From: Bill Gates (Microsoft)
Sent: Thursday, June 14, 2001, 11:49 AM
To: Developer & IT Professionals
Subject: Microsoft .NET Today

What will the next generation of the Internet look like? Many of us envision an online world where constellations of PCs, servers, smart devices and Internet-based services can collaborate seamlessly. Businesses will be able to share data, integrate their processes, and join forces to offer customized, comprehensive solutions to their customers. And the information you or your business need will be available wherever you are—whatever computing device, platform or application you are using.

That vision has yet to be achieved. In many respects, today's Internet still mirrors the old mainframe world. It's a server-centric computing model, with the browser playing the role of dumb terminal. Much of the information your business needs is locked up in centralized databases, served up a page at a time to individual users. Worse, Web pages are simply a "picture" of the data, not the data itself, forcing many developers back to "screen scraping" to acquire information. And integrating that underlying data with your business's existing systems—never mind those of your partners—is a costly and frustrating challenge.

Compounding this frustration is the fact that today's standalone applications and Web sites create islands of functionality and data. You have to navigate manually between Web sites, devices and applications, logging in each time and rarely being able to carry data with you. You have to keep constant track of which particular application or device or Web site gives you which level of access to which particular data. Tasks that ought to be simple—such as arranging a meeting with colleagues from partner companies and automatically updating every attendee's calendar—are a nightmare. Productivity is one of the main casualties.

Solving such problems is the key challenge for the next generation of the Internet. At the heart of the solution is eXtensible Markup Language, or XML. An open industry standard managed by the World Wide Web Consortium, XML enables developers to describe data being exchanged between PCs, smart devices, applications and Web sites. Because XML separates the underlying data from how that data is displayed, the data itself is "unlocked" so that it can easily be organized, programmed, edited and exchanged between any Web sites, applications and devices. XML is a lingua franca for the Internet age. Just as the Web revolutionized how users talk to applications, XML transforms how applications talk to each other.

As developers become more familiar with XML, they are moving beyond simply using it for data. With the help of XML-based technologies such as SOAP (which enables applications to interoperate via standard Internet protocols) and UDDI (which gives businesses a standard way to describe their services and connect automatically), they are creating a new type of software that uses XML to provide Web-based services. These XML Web services are programmable and reusable, much like component software, except that they are accessible anywhere via the Internet. Programs using this model will run across multiple Web sites, drawing on information and services from each of them, and combining and delivering them in customized form to any device.

How will businesses and their customers benefit from this? Because XML Web services break down the distinctions between the Internet, standalone applications and computing devices of every kind, they enable businesses to collaborate to offer an unprecedented range of integrated and customized solutions—solutions that enable their customers to act on information any time, any place and on any device.

The power of the XML Web services model is amazing. A company offering an online electronic-payment service can expose its service to partners, so that they can deliver it as part of their own offering—regardless of what platform they are using. An airline can link its online reservation system to that of a car-rental partner, so travelers can book a car at the same time they book a flight. An online auction company can notify bidders when they are outbid or have won an auction, or could partner with other firms to offer alternative shipping, fulfillment or payment options. XML Web services help your business break free of its boundaries.

With XML Web services gaining momentum among developers as the next generation of Internet-based computing, it's time to deliver a platform that makes it simpler to build these solutions and provides a reliable framework for integration and interoperability. Such a platform must be based on open standards, so it can work across all programming languages, operating systems and applications. And it must combine the power of PCs and smart devices with the richness of the Internet.

Microsoft's platform for building, deploying, operating and integrating XML Web services is .NET. In the next few pages we'll describe .NET, explain its many benefits, and set out a roadmap for transforming your business to take advantage of everything it has to offer.



Chairman and Chief Software Architect

A Revolution Is Upon Us. Revolutions are a way of life in the computer industry. Only 20 years ago, the world was still in the mainframe era. Few people had access to or used computers, and when they did, it was only through the nearest IT department. The PC, the graphical user interface, and the introduction of the Internet changed all that. They democratized computing for hundreds of millions of people and transformed the computer into a mass-market product.

Since then, standards such as HTML and HTTP have exponentially increased people's use of the Internet. This base protocol for viewing content on the Web (and the associated software for "browsing" this content) grew Web usage to what it is today—a key activity in the daily lives of business employees and consumers.

As a result of the changes in how businesses and consumers use the Web, the industry is converging on a new computing model that enables a standard way of building applications and processes to connect and exchange information over the Web. This new Internet-based integration methodology, called "XML Web services," enables applications, machines, and business processes to work together in a way never previously possible. The widespread support around XML within the developer community assures that businesses will thrive and cooperate in the accelerated, Internet-based economy with this XML Web services model.

The first principle of XML Web services is that systems connect through the Internet—a safe assumption given the high availability and low-cost connectivity provided by the Internet. Second, there needs to be a simple way to "find" services on the Internet with which businesses can work. UDDI (Universal Description, Discovery, and Integration – www.uddi.org) is a broad industry effort, involving companies such as Microsoft, Ariba, COMPAQ, Dell, HP, IBM, SAP, and many others, which provides a way to locate and understand services provided by other companies. It's a kind of "yellow pages" on the Internet for the industry.

Third, a common language is needed to ensure that information is shared with others. XML is the ingredient that makes this possible. XML provides a common data format so that you can continue to work with data and information in a way that doesn't require business partners or customers to use a particular programming language, application, or operating system to interact with your systems. The final principle is that there must be a way to actually conduct business—for example, to call the service, book the appointment, order the part, or deliver the information—through a common protocol. This

protocol is called SOAP (Simple Object Access Protocol). It enables systems to talk to one another and make requests. SOAP is the new model for Internet native integration.

These four principles enable you to connect, find, transform, and transact across systems, applications, and processes to deliver XML Web services. XML Web services are flexible technologies that bind disparate systems across different languages, unifying personal computing, enterprise computing, and the Web. As long as the fundamental communication occurs via XML Web services, each system can be independent from the others, with each "service" running on entirely different systems, even in different parts of the world.

The benefits of XML Web services are far-ranging and will be instrumental in propelling explosive business growth over the next few years. Businesses will be able to:

Easily integrate with other businesses using XML Web services. Your software will easily integrate with other pieces of software—from the desktop to the mainframe—both within your enterprise and at external sites. These integration capabilities enable you to forge closer ties with business partners and pursue best-of-breed integration of business processes.

Develop applications faster. As the pool of XML Web services grows, developers will be delivering more and more software and services, including legacy applications, that operate within the XML Web services programming model. If there is existing code that can help you solve your problem, you can find it and integrate with it through XML Web services, instead of reinventing it.

Easily implement personalization. Integration with external data sources is part of the XML Web services programming model. This makes it possible for you to request information and transform data by whatever means necessary to deliver individualized software and services. Your maintenance burden is reduced because you no longer have to collect and maintain this information on an application-by-application basis.

A New User Experience. Employing XML Web services provides benefits for both consumers and businesses.

Consumers will enjoy unparalleled ease of use when they use applications built with XML Web services. Because XML Web services link applications, services, and devices together as connected solutions, software arrives as part of an integrated experience that offers simplicity in computing. XML Web services give users the ability to act on information any time, any place, from any smart device.

DOLLAR MARKET FACT

In two weeks, programmers built, tested, and deployed a Microsoft solution that translates reservation requests and data between Dollar® Rent-A-Car's VMS-based reservation systems and an airline partner's UNIX servers. Because XML Web services powered the solution, Dollar can reuse that same integration model to link with any number of partners.

For businesses, implementing software projects using XML Web services solves many of today's supply-chain and demand-chain integration challenges. With its industry-standard communication interfaces, an XML Web service is a simple, reliable way to blend existing systems with new applications and services.

Microsoft .NET—An XML Web Services Platform

With the momentum behind XML Web services growing among developers, Microsoft is building a platform to help them write, deploy, and manage these services. Microsoft® .NET is that platform. It contains both products and services developers need to build and run XML Web services, and enables some of the User Experiences that demonstrate the integration of XML Web services with the universe of computers, smart devices, and Web-based services used by consumers.

Microsoft .NET is optimized for XML and XML Web services, but it is by no means the only choice of



XML Web services can be leveraged in endless combinations to create User Experiences.

development platform. Because XML is an open standard, created and managed by the World Wide Web Consortium with the input of many computer-industry companies, the products and services within Microsoft .NET will interoperate with a broad set of XML- and XML Web services-enabled infrastructure and developer tools from other vendors. With over 5 million developers skilled on Microsoft technology, the development community is poised to begin mass delivery of XML Web services.

MICROSOFT .NET PRODUCTS AND SERVICES

Developer tools and technologies. A productive set of tools is critical to developer success on a new platform like .NET. Visual Studio.NET and the Microsoft .NET Framework supply a complete solution for building, deploying, and running XML Web services. They help you maximize the performance, reliability, and security of your XML Web services.

Visual Studio.NET is the next generation of Microsoft's popular multi-language development tool, built especially for .NET. Visual Studio.NET helps developers quickly build XML Web services and applications that scale easily, using the language of their choice. Visual Studio.NET advances the following high-productivity programming languages: Visual Basic®, which includes new object-oriented programming features; Visual C++®, which advances Windows®-based development and enables you to build .NET applications; and C#, which brings RAD to the C and C++ developer. In addition to these languages provided by Microsoft, there will be over 20 languages provided by partners,

including Perl, Python, Cobol, and Eiffel, from which developers can choose.

The .NET Framework is a high-productivity, standards-based, multi-language application execution environment that handles essential plumbing chores and eases deployment. It provides an application execution environment that manages memory, addresses versioning issues, and improves the reliability, scalability, and security of your application. The .NET Framework consists of several parts, including the Common Language Runtime, a rich set of class libraries for building XML Web services, and ASP.NET, the next generation of Active Server Pages.

Server infrastructure. XML Web services should be built on a next-generation infrastructure that offers developers the benefits of modular architecture, economical and linear scaling, security, reliability,

manageability, and high availability. The .NET Enterprise Servers and the Windows 2000 Server family make up the Microsoft .NET server infrastructure for deploying, managing, and orchestrating XML Web services. Designed with mission-critical performance in mind, they provide enterprises with the agility they need to integrate their systems, applications, and partners through XML Web services, and the flexibility to adapt to changing business requirements.

The Windows 2000 Server family is Microsoft's secure, scalable foundation for running the .NET Enterprise Servers and the next generation of business applications.

The .NET Enterprise Servers are:

- **Application Center 2000** to deploy and manage highly available and scalable Web applications;
- **BizTalk™ Server 2000** to build XML-based business processes across applications and organizations;
- **Commerce Server 2000** for quickly building scalable e-commerce solutions;
- **Content Management Server 2001** to manage content for dynamic e-business Web sites;
- **Exchange 2000 Server** to enable messaging and collaboration, anytime, anywhere;
- **Host Integration Server 2000** for bridging data and applications on legacy systems;
- **Internet Security and Acceleration Server 2000** for secure, fast Internet connectivity;
- **Mobile Information 2001 Server** to enable application support by mobile devices like cell phones;
- **SharePoint™ Portal Server 2001** to find, share, and publish business information; and
- **SQL Server™ 2000** to store, retrieve, and analyze structured XML data.

Services. An XML Web services model offers developers an opportunity to achieve economies of scale by utilizing a set of core XML Web services that releases developers from the burden of building everything themselves. By integrating with these core services to perform routine tasks, developers can concentrate on building high-value, business-critical XML Web services. Microsoft Passport is the first such service, providing authentication services for over 160 million accounts. Microsoft and many other companies plan to develop more core services for users and enterprises.

Clients. Microsoft will support XML Web services across the full range of smart clients so that your customers can access your XML Web services regardless of location or type of device. Some of the clients Microsoft offers include Windows CE, Windows Embedded, Windows 2000, and the upcoming Windows XP. These clients will power PCs, laptops, workstations, smart phones, handheld computers, Tablet PCs, Xbox™ game consoles, and many other smart devices.

EXPEDIA MARKET FACT

XML Web services will help Expedia.com® transform itineraries into communication centers—allowing travelers to pick distinct notification settings for different members of their integrated contact list. By providing customers with relevant and timely information at their convenience, Expedia will continue to attract new customers and further strengthen the loyalty of their existing customer base.

XML-Enabled Products & Services

		PRESENT		FUTURE
<div>INFRASTRUCTURE</div> <div>WEB SERVICES</div> <div>PCs AND SMART DEVICES</div>	Client Operating Systems	Windows 2000 Professional Windows CE	Windows Me	Windows XP Professional Windows XP Home Edition Windows XP Embedded Windows CE "Talisker"
	Smart Devices	Pocket PC	Mobile Explorer™	Xbox Tablet PC Smart phone code-named "Stinger" UltimateTV®
	User Experiences	MSN Explorer Office XP	Visio® 2002	Next version of Office Next version of Microsoft Project Next version of Visio
	Building Block Services	Passport		"HailStorm" Services
	Developer Tools	Visual Studio 6.0 SOAP Toolkit 2.0	Visual Studio.NET Beta 2 .NET Framework Beta 2	Visual Studio.NET .NET Framework .NET Compact Framework
	Servers	Windows 2000 Server Windows 2000 Advanced Server Windows 2000 Datacenter Server SQL Server 2000 Exchange 2000 Server Commerce Server 2000 Host Integration Server 2000	ISA Server 2000 BizTalk Server 2000 Application Center 2000 SharePoint Portal Server 2001 Mobile Information 2001 Server Content Management Server 2001	Next version of Windows code-named "Whistler" Server family Next version of SQL Server code-named "Yukon"

User Experiences. A good User Experience pulls together all of the XML Web services and client software a particular user needs, and presents everything to the user in an integrated way that makes sense—even if it calls on XML Web services run by other companies on other machines. Microsoft will deliver User Experiences for knowledge workers, consumers, enterprises, small businesses, and developers. Some of the products that Microsoft is transitioning into User Experiences are Microsoft Office, MSN®, bCentral™, and Visual Studio.NET.

YOUR PATH TO XML WEB SERVICES

Microsoft is delivering the product line to put your business on the path to XML Web services today:

- **Windows 2000 Server**—the reliable infrastructure for the linear, cost-effective scaling required by the XML Web services world.
- **The .NET Enterprise Servers**—the foundation for running, managing, and securing XML Web services.
- **XML Web services**—Passport.

• XML Web service-capable clients—

Windows 2000, Windows Me, Windows CE, Office XP, and soon Windows XP.

- **Developer tools and technologies**—the latest version of the Microsoft SOAP Toolkit for XML Web services and betas of Visual Studio.NET.

Leading-edge IT organizations, like **Dollar Rent-A-Car**, **Expedia.com**, and others, use these products today to build high-value XML Web services that solve today's integration and interoperability problems. For example, when CheckSpace offered its electronic payment processing capabilities through an XML Web service, it expanded its market reach to new small-business customers, resellers, and online marketplaces that used a variety of computer systems and accounting packages. Those new customers now enjoy streamlined accounting processes and more efficient cash-flow management.

FIVE EASY STEPS

Now is the time to prepare your company to take advantage of XML Web services. Five easy steps lead to the future:

1. Educate yourself and your IT department about XML Web services and Microsoft .NET;
2. Investigate Windows 2000, Office XP, and the Microsoft .NET Enterprise Servers as a way to upgrade the XML capabilities of your systems and infrastructure;
3. Download and evaluate betas of Microsoft's developer tools;
4. Create pilot projects that test XML Web services; and
5. Insist that your vendors have a roadmap for making their applications accessible as XML Web services.

A subscription to **MSDN® Universal** delivers the developer tools and servers you need to learn about .NET. Microsoft also offers .NET Readiness Training, which teaches the technical foundation for creating XML Web services and instructs you on using tools like C# and Visual Studio.NET.

Get started and learn more. For more information about XML Web services and Microsoft .NET, visit microsoft.com/net

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erations? How long did it take for your IT SWAT team to get you up and running?

With experimentation should come training in new technologies such as wireless networks and mobile applications. In addition, pursue new training techniques like online learning (in North America, \$15 billion will be spent on online training by 2004, according to IDC).

Finally, view current budget constraints as a time to craft an IT training policy to counter the parochialism born of IT spending in the 1990s.

IT training can be a unifying theme to enhance individual skill levels, increase job efficiency and emphasize interdepartmental cooperation. With many IT projects scrapped or on hold, it makes good business sense to help workers use what's already installed. ▀

JOHN GANTZ

A Little Skepticism For IBM's eLiza

IBM CALLS IT "eLiza," which is short for eLizard, a whimsical reference to the notion that it would be nice if today's computers had the computational ability and adaptability of a lizard.

(In his book *The Age of Spiritual Machines*, noted scientist and author Ray Kurzweil estimated that IBM's Deep Blue supercomputer, which beat chess champion Garry Kasparov in 1997, had the brain equivalent of an adult lizard.)

Emanating from IBM's development labs, eLiza adds self-management capabilities seen in some high-end systems to all IBM computers, down to the level of Web and appliance servers. Self-management capabilities include self-configuration, self-healing, self-optimization, dynamic workload

management and self-protection. Think about it: no taking servers off-line to reconfigure them, no sitting at consoles juggling workloads, no constant reaction to system alarms — less stress all around.

I buy the rationale. With server technology migrating to multidimensional arrays of processors working in ad hoc configurations on dynamically



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changing workloads, we're going to need a lot of built-in capability — the ultimate in plug-and-play. If a person has to monitor the comings and goings of thousands of servers on jobs that ebb and flow in milliseconds, you might as well have Homer Simpson running a nuclear power plant.

IBM's goal with eLiza is to build into computers

the equivalent of an autonomic nervous system (wherein lies the computational strength of lizards). Let the computers take care of their own housekeeping. IBM already has bits and pieces of the necessary technology in products like its Intelligent Resource Director, announced in March with the z/OS operating system for its z900 servers, and in software rejuvenation tools introduced with its x300 thin server, announced last month.

But can all this disparate technology be knit into a single whole that becomes the interoperable standard for an entire industry?

I'm skeptical. Over the years, I've seen ideas for overarching system management schemes come and go, such as IBM's own System Application Architecture and AT&T's Unified Network Management Architecture. Such schemes never seem able to keep up with the expanding universe of computing devices, vendors, protocols, data types and architectures. Their development proceeds at a pace much slower than that of market innovations.

That's where I see IBM's challenge. It's one thing to add bits and pieces of high-end technology into

new server products; it's another to inspire other vendors to add the same technology so that servers from different manufacturers will someday be able to be woven into self-managing networks.

Even if IBM were to make every bit of eLiza's technology available to others through altruistic licensing terms (the company says some but not all of eLiza will be made available to others), other vendors would extend or modify it to provide product differentiation, just as they did with programming languages, Unix and other so-called open standards.

You, as an IT professional, must understand how much of this self-management you want, how much you're willing to be beholden to IBM to get it and how it will fit with what you get from other vendors. After all, how many autonomic nervous systems can you have in one body?

IBM's eLiza targets a complex and difficult problem, and the software that will make self-managing systems will be both complex and buried deep within the system. You'll have to put the gains it brings into context for your organization. ▀

READERS' LETTERS

Look Before You Cast Doubts on Linux

WHEN MICHAEL Gartenberg talks about acquisition costs vs. switching costs, he makes a perfectly logical, though entirely misleading, argument ["Linux Falls Short of Becoming a Mainstream OS," *News Opinion*, May 28]. By talking first about the low acquisition cost of Linux, he sets up an argument so weak that even he can knock it down. He then praises Microsoft as though it has done something good by creating "non-substitutable infrastructure technologies, [which] by definition, support high switching costs." Experienced IT managers know that high switching costs represent at best a poor design and at worst an extortion waiting to happen. The real cost that Gartenberg should be looking at is the long-term cost to run and expand a system's capabilities. This is where Linux, not Win-

dows, really excels. The average life span of a company successful enough to make it to the Fortune 500 is 80 years. Why do companies die? Because they can't evolve. Nonsubstitutable infrastructure is the tar that will trap even the fastest-moving dinosaur. **Michael Tiemann**
Chief technology officer
Red Hat Inc.
Durham, N.C.

SOME ESTIMATES show that Linux is the most-used Unix variant, and it's cited as the most-used server for Web hosting. The most common false assumption about Linux is that it is owned by a company, such as Red Hat. While it and others do a laudable job of packaging Linux and have arguably made the platform more palatable to big business, Linux has much humbler roots, created as a tool by those who needed its functionality and maintained by literally thou-

sands of programmers. And it has no need to compete for the No. 1 spot on the desktop because it can't go bankrupt or cease to be supported on future hardware. As long as there are enthusiasts and talented programmers working to solve problems, it will continue to evolve and grow.

Adam Delu, M.D.
University of Texas, Houston
Medical School

TWO COST advantages of replacing Windows on the desktop are stability and security. While claims can be made that Windows 2000 is more stable than its predecessor, NT 4.0, it took two service packs to get where it is today. Linux has operated 24/7 for several years. And Windows is much more of a security risk to its users than Linux. Yes, there have been attacks against Linux, but nothing near the hacking into Windows.

Les Hartzman
Sherman Oaks, Calif.

Another Digi-dropout

THANKS, Russell Kay, for giving the digital camera issue a real-world perspective ["Digital Dropout Diary," *Technology*, May 28]. Your column is a blunt reminder about tech capabilities vs. day-to-day application by civilians. I just completed a major personal photo project and was occasionally ridiculed — why did a high-tech guy like me continue to use an analog (chemical) camera? You summarized every point in my response. Thanks for the clear thinking.

Gary Arlen
Arlen Communications Inc.
Bethesda, Md.

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

ALEX TORRALBAS

Bad Legislation Opens Web to Corporate Lawyers

I RECENTLY finished a very funny novel by syndicated columnist Dave Barry called *Big Trouble*. The action takes place in Miami, where my mother lives, so I decided to send it to her when I was done with it. She'd really get a kick out of it.



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Good thing the book was on good, way-old-fashioned paper, and not digital. If this had been some kind of e-book, all kinds of obnoxious code would have prevented me from letting her read it: It would have worked only on the device on which it was originally downloaded.

How do they justify this nonsense? Because of the worst piece of legislation to affect the free flow of information: the Digital Millennium Copyright Act.

This stinking hunk of law makes it illegal to do something that's been legal for longer than almost anyone reading this column has been alive. Its essence is that you can't make copies of anything, for any reason, period. No more making compilation tapes of your favorite party songs or photocopies of articles to hand out at a meeting.

MP3.com, Napster and 2600 Magazine have all recently lost court battles when they were confronted by lawyers waving this piece of legislative junk at them. Little of what the media conglomerates are doing in their take-no-prisoners litigation has anything to do with copyrights or protecting themselves from pirates. It has to do with being able to dominate distribution and marketing.

The genie is out of the bottle on this one, wreaking havoc on our rights and placing absurd roadblocks in the way of progress.

The 2600 Magazine case was especially troubling. The company was barred from providing even a hyperlink to a server in New Zealand that contains source code to bypass some of the restrictions on DVDs. A *hyperlink*. That's like making it illegal for me to say, "They sell drugs on that street," because, to use the tortured logic from 2600 Magazine's case, merely giving this pointer is as illegal as actually selling drugs.

The Recording Industry Association of America (RIAA), the group representing the major recording labels, hid behind a sanctimonious argument

that Napster would turn Madonna into a pauper if left to its own devices. The RIAA's real aim was to protect the business of selling overpriced plastic through near-monopoly distribution channels. One of the more idiotic and sad items to come out of this particular saga had the RIAA demanding that the quality of MP3 recordings be intentionally degraded to way below CD quality to force people to want the real thing.

Between corporate lawyers torturing the intent of legislation and law and the unmitigated greed of media companies, the future of "e" anything that currently exists on paper or plastic is being smothered in its cradle.

But, sadly, the media conglomerates now own the product and much of the hardware and software, so expect more stupidity to make it to court. ▀

WILLIAM M. ULRICH

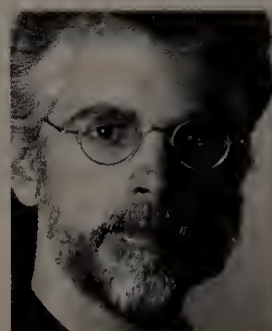
Demand Better Tools for Your Legacy Systems

WHILE ATTENDING the recent JavaOne show in San Francisco, I was impressed with the degree to which development technologies have evolved. Developers have access to tools that didn't exist a few years ago. These tools increase the efficiency and effectiveness of systems analysts, designers, developers and testers, which in turn benefits the business community.

Unfortunately, most of these products focus on newer languages and provide little support for legacy environments and the business units that rely on older applications. IT must demand more sophisticated tools that address legacy application challenges, or businesses will ultimately suffer.

The gap between the tools available for newer languages such as Java and those available for legacy applications written in languages such as Cobol is striking, given the size and significance of legacy applications in businesses.

For example, there are roughly 180 billion lines of Cobol code today [News Opinion, "Remember Cobol? If You Don't, Get Reacquainted," May 21], which account for the largest percentage of code in corporate business systems. And programmers



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continue to write more Cobol code to support new requirements. A recent *eWeek* article quoted Gartner as saying that 5 billion lines of Cobol code will be created annually over the next four years.

These statistics highlight the importance of older languages, such as Cobol, in delivering new functionality and supporting existing business capabilities. But what kinds of tools should vendors focus on for legacy applications? The Java community provides some answers.

Java development tools include code generators, intelligent editors with built-in wizards, logic-tracing tools and debugging facilities. Modeling tools augment these products by allowing analysts to create design models that feed specifications into development products. These tools are part of integrated development environments that synchronize business models, specifications and program logic across the development cycle.

For example, a designer can change a business rule in a design model and can have that change reflected in the system source code. A coding change would also be reflected within a design model. Model-driven development and maintenance is a very effective and efficient way to evolve systems over the long term.

Companies can also mix and match tools from different vendors and can retain much of the interoperability between design and development products. These accomplishments represent a quantum leap in delivering quality systems in time frames that are much shorter than what was available a few years ago.

IT needs similar capabilities for legacy environments because the programmers who understand them are scarce. At JavaOne, a Sun executive said there are more than 2.5 million Java developers working today. By contrast, according to the *eWeek* article, Gartner says there are only 90,000 Cobol programmers working in North America today, and that number is shrinking 13% annually.

There are too many critical legacy applications and too few skilled technicians to work on them. As an industry, we must increase the effectiveness of the remaining legacy programmers through better analysis, development, upgrade, debugging and componentization tools. To accomplish this, IT must demand better tools from vendors.

Several vendors, some of which also market Java development tools, have products with legacy capabilities. But most are reluctant to promote them for fear of being typecast as being stuck in the past.

Cobol and other legacy applications aren't going away anytime soon, and they will continue playing an important role in business for years to come. Insurance, financial, health care and other legacy-dependent industries will want to invest in these systems accordingly. ▀

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BUSINESS

HOLLYWOOD DREAMS

What's it like to work in IT at DreamWorks' production studios? You may get the chance to mingle with stars, and the gig could even open some doors into production work. But supporting Hollywood egos can create a political landscape that's tough to navigate, warns IT director Jeff Gelb. **▶ 30**

CELEBRATING DIFFERENCES

Diversity is about more than color and gender. It's about all the differences that make us unique in terms of lifestyles and challenges, as well as skills and contributions. Nurturing those differences has been the key to success for several of *Computerworld's* picks for the Best Places for Diversity. **▶ 32**

STRETCHING YOUR DOLLARS

As technology budgets come under increasing scrutiny in this tough economy, industry practitioners say total cost of ownership shouldn't be measured in dollar terms alone. There's also service quality and business value to consider. **▶ 36**

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"BEING A PARENT'S a one-shot deal, so you get it right the first time," says State Street's Richard Wight. Fortunately, his company shares that philosophy.

WEBB CHAPPELL

THE BEST PLACES TO WORK FOR BENEFITS

SUCCESS ON THE JOB shouldn't require the sacrifice of success in one's personal life — a philosophy shared by all of the companies on *Computerworld's* 100 Best Places to Work for Benefits list. So offerings aimed at helping people achieve work/life balance, such as flexible work schedules and child care, are mainstays of the top benefits packages.

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WORKSTYLES

Behind the Lights, Camera and Action at DreamWorks SKG

Interviewee: Jeff Gelb, director of IT

Company: DreamWorks SKG, an animation, feature-film and television production company

Main location: Glendale, Calif.

Number of IT employees: 75 in the IT group, plus about 60 in animation technology

Number of employees (end users): 1,800 worldwide

Important systems: "Our theatrical distribution and sales system. It's how we track product placement in a sense. We have 4,000 or 5,000 prints of *Shrek*, and theaters pay us by how many times they show the film. So, we can track ticket sales and gross by theater, by chain, by region."

"Another is a story- and script-tracking system. We scan in proposed scripts,

e-mail those out to script readers, who e-mail us back their comments, and all of those are distributed via the system to enable execs to make greenlight decisions. If those tools aren't available, we could potentially lose out. Scripts are shopped around to multiple studios, and if you lose out on a good script, that could cost you millions in potential revenue."

Does the IT group come into contact with celebrities? "It depends. The group that follows productions does — they were on-site in Fiji for *Cast Away*, for example, and had a lot of contact with Tom Hanks. And I have one person who's dedicated to S, K and G [company executives Steven Spielberg, Jeffrey Katzenberg and David Geffen], and they have a lot of star contact. But, I've been here three years, and I've never even met Steven."

What kind of pressure does a film release put on IT?

"System uptime becomes a premium. If that distribution and sales system goes down, we lose money. . . . We release

eight to 12 films a year."

What's unique about the day-to-day environment in entertainment industry IT?

"It can be difficult to navigate the political landscape. Everyone thinks their project should be the priority. It's an attitude that runs throughout the entertainment industry, and name-dropping is pervasive, and you have to figure out who really needs something now and

who can wait."

How many IT employees are trying to sell screenplays?

"It seems that everyone is, at some time, trying to sell a script or act or whatever."

IT training on tap this year: "Windows 2000; Versata, a new applications development tool that generates applications using business rules;

and some [IT staffers] are going to film editing classes so they can understand what their users are doing."

Compensation and bonuses: "It's comparable to IT salaries across other industries."

Workday: "It's typically eight to 10 hours, with an average start time between 8:30 and 10 [a.m.] The help desk is on from 7 [a.m.] to 7 [p.m.] If you're in IT support for a [film or TV] production, you're under the gun, and you may be working 12- to 16-hour days. If you support S, K and G, you're on call 24/7 — when they need you, you're available."

Percentage of staff that telecommutes on a given day: "From an IT perspective, it's an on-site job."

In-house cafeteria/food service: "Yes, and breakfast and lunch are served free to all employees."

Would employees feel comfortable e-mailing Spielberg, Katzenberg or Geffen? "I would say yes."

— Leslie Jaye Goff
(lgoff@ix.netcom.com)



What It's Like To Work at ...

ED YOURDON

The Joy of Mentoring

AT A RECENT convivial lunch, Jerry Weinberg related the story of a consulting client who had just finished reading his book *The Psychology of Computer Programming* (Dorset House, 1971). "You must have written that book about me," the client remarked. "One of the episodes in the book sounded just like my last project."

"How old are you?" Weinberg asked. The response: "23."

"That book was written several years before you were born," said Weinberg. "I don't think that episode could have been about you."

Several of us at the lunch table had also published books in the early '70s, and we all agreed that the response from today's generation of IT professionals is typically, "Did you old guys actually *know* all that stuff way back then?"

Today's young IT professionals and managers seem vaguely suspicious when we reassure them that the *same* problems that occurred "way back then" occur now and that the *same* basic principles of software design and project management that applied then apply now.

If you're a longtime IT professional, you may find yourself in a position of playing an enormously important role in the IT profession: mentor. It's not a role any of us train for. And with rare exceptions, it's not one that our employers recognize or support.

But to whatever extent there are lessons and guidelines that can be passed on from one generation of IT veterans to the next, mentoring may save companies untold millions of dollars in wasted costs and failed projects.

Technical mentoring is frustrating and largely unappreciated because of the staggering changes in hardware technology over the past 40 years. Today's programmers, equipped with 256MB desktop computers, don't want to hear about the amazing things we did with our pitiful little 4KB machines, and they don't want to hear about our decades-old experiences with such au courant concepts as prototyping.

But *managerial* mentoring is more successful. After all, the politics of dealing with headstrong programmers and demanding users are the same today as they were 40 years ago. Today's jaded, battle-scarred veterans were once just as naive and idealistic as the current generation of dot-com kids — the ones who believe

the Internet can bring about world peace and universal prosperity.

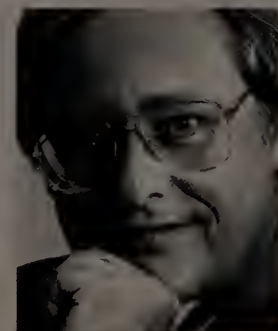
Here's some advice for prospective mentors: Offer advice when it's requested, but don't make judgmental criticisms of a fledgling manager's decisions. Don't react to a current IT situation by telling a war story from the early '60s. Your pupil is likely to mutter to himself, "I'll bet they didn't even have electricity way back then." Instead, offer a low-key, nonjudgmental prediction of the likely outcome, taking into account your student's managerial/political situation, and allow him to decide whether to explore your prediction in more detail.

Chances are he won't, and the prediction will be forgotten.

But if your prediction comes true — if, for example, a senior executive's heavy-handed, short-sighted decision leads to disaster — then your pupil is likely to come back to you and remark in an awed voice, "It's working out just the way you described. How did you know things would turn out this way?"

And *then* you can relate your war story about the good old days, and tell him about the 10 occasions in your career when you saw the same managerial faux pas and discuss the lessons that can be gleaned from such experiences.

And when you offer a prediction about the next impending managerial disaster, there's a good chance that your student will listen attentively and begin asking questions. And perhaps you can help prevent a disaster or two, which may be far more productive than trying to explain why you could have built the same software in your old 4KB machine that your pupil is struggling to build with today's massive hardware technology. ▀



ED YOURDON is editor of *Cutter IT Journal*, published by Cutter Consortium in Arlington, Mass. Contact him through www.yourdon.com.

KEVIN FOGARTY/BRICKS AND CLICKS

One Step Forward . . .

EVER NOTICE THAT when one technology replaces another, we usually don't get a huge advance in the things the technology is supposed to accomplish? Instead, we get the worst aspects of both old and new technology.

For instance, I noticed a gee-whiz *Boston Globe* article the other day about a local grocery store using a computer-enabled shopping cart. An onboard touch-screen unit maintains a running total on everything the shopper buys, locates items he can't find, offers promotions in the aisles he's passing through and reminds him to pick up things he's bought before but may have forgotten this time.

On the surface, it sounds like the thing eliminates many of the headaches of hunt-and-shop grocery grubbing. But by layering technology on that ancient process, isn't it combining the worst of the two? Minimal convenience plus a complete loss of privacy for the customer, with minimal added benefit to the store, which has to buy the new technology to gather information it gets at the checkout counter anyway.

There's a similar bad trade-off with a new Internet technology called Surge being put together by Curl Corp., a Cambridge, Mass.-based start-up backed by Web inventor Tim Berners-Lee.

Developers use a proprietary language called Curl to build into Web pages small programs that are easy to download. The Surge plug-in compresses and decompresses data it exchanges with the server.

That makes pages faster and glitzier — if the processing doesn't take too long and if the user has the plug-in. And that's assuming that the interactivity isn't just as easy to get with easier scripting tools.

Plus, you get to surrender all your computing resources and network access to the first hacker to figure out how to make Surge code malicious. It's the Web's insecurity plus the rigidity of client/server.

Worst-of-both-world innovations

like that are why I have strong doubts about the ultimate success of most attempts to add front ends that webify or otherwise spruce up the legacy applications that still do the bulk of the heavy lifting in IT.

Last week, *Computerworld* reported on an effort by the Navy and Marine Corps to link more than 300 facilities around the world into a single \$6.9 billion intranet [News, June 11]. One hang-up is the number of legacy applications involved: tens of thousands, running all over the world.

The good news is that the project has already uncovered as many as 50

redundant versions of some apps that can be retired. The bad news is that there will still be a mess of legacy apps on that intranet even after they're gone.

And that's typical. In fact, a whole microindustry of consultants and integrators has sprung up specifically building what they call "sell-side" e-commerce systems (see

story, page 52). Their primary purpose is to act as middleware connecting shiny new Web commerce applications to the grungy, idiosyncratic internal applications that run the business.

It sounds like a simple, or at least a sensible, way to solve a problem. But the inherent assumptions in that approach are that you shouldn't significantly change the underlying applications and that adding a layer of unknown technology between the quirky legacies and the untested Web apps is a good idea.

It's not. Instead of a new way of doing business, what you get is more momentum for legacy applications that should probably be on their way out. Once you've spent a ton of money to connect legacy apps to the Web, it's far easier to tweak the mid-

dleware than to redesign the underlying apps to be more responsive to changes in your business processes. That means your business processes won't change quickly, even as your business opportunities do.

Sometimes it makes sense to try

to layer new technology on an old process to get some advantage out of what's new without the trouble of changing what's old. But more often, you'd be better off with a clean break — instead of getting stuck with the worst of both worlds. ▀



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100 DIVERSITY 100 BEST PLACES TO WORK IN IT

DIALLO NOEL, WHO is black, was a certified computer technician with no degree and five months of fruitless interviews behind him

when he arrived at Public Broadcasting Service last year to interview for a help desk job. After two technical interviews, he was surprised to be ushered into CIO Andre Mendes' office.

Mendes "did something no one ever did," Noel recalls. "He said, 'Tell me about you.' I'd been waiting five months to talk about myself. Andre felt my passion for the industry, and it was just a click."

Noel has been moving up ever since. "I've felt appreciated, and that's pushed me to work harder," he says. Noel is currently a messaging support administrator at PBS's 642-member IT department and is working toward his certification as a network engineer.

The key is looking to people's futures rather than their pasts, says Mendes, who has since become chief operating officer/chief technology officer at Pluvita Corp., a biotech start-up in Bethesda, Md.

"We focused on potential, work ethic and ability to work well with others rather than [on a] degree," he says. "The moment you do that, you are bound to find the talent. Open the door and they will come through it, because people are out there."

Diversity is about more than color

and gender, although that's how it's frequently measured. It's about all the differences that make us unique in terms of lifestyles and challenges as well as skills and contributions.

It's about technical analyst Francis Head being able to get into the guts of 150 servers at Atlanta-based Georgia Pacific Corp. because somebody made sure they're all low enough for him to access from his wheelchair.

It's about Rachelle Byars, a business analyst at Alexandria, Va.-based PBS, noticing during an important IT meeting that there wasn't a single white face in the room.

It's about Joelle Paris, a new mother and IT business relationship manager at Royal Caribbean Cruises Ltd., keeping her career on track while scaling back her workweek to spend more time with her baby.

Noel made his own success, but PBS provided the environment and structure to let it happen. While at the help

desk, Noel was given access to computer-based and outside training. He was also informally mentored by Orin Love, a black man who had started at the help desk and had moved on to become an e-mail administrator.

"Not only did Orin want his friend to succeed," explains David Shomette, director of IT administration at PBS, "[Orin's] success was based on Diallo taking over Orin's day-to-day responsibilities so that Orin could go to the next level. A rising tide lifts all boats."

Teco Energy Inc. took a chance on David Gondreau in 1984, and it has paid off. A systems analyst who is quadriplegic, Gondreau came to the Tampa, Fla.-based firm as an intern and stayed. That longevity isn't unusual in the 173-person IT department, where the average tenure is 12 years.

"They have never had someone with such a high disability as mine, so it was a learning experience on both sides," Gondreau says. "But my disability is

Best employers know that nurturing a diverse IT workforce requires sensitivity, flexibility, outreach, two-way communication and a willingness to take risks.

By Kathleen Melymuka

DIVERSITY PAYS OFF

essentially a nonfactor; they just make accommodations when I need them."

Those include flexible work schedules, special parking, elevators and automatic doors in restrooms and easily accessible water fountains.

But Gondreau says Teco's employees go the extra mile. "The folks here are just fabulous," he says. "I have had health problems, and sometimes my teammates from work have even come over and stayed with me after operations if my family isn't around. It's more than just work, its family."

Learning to Listen

In many of the Best Places to Work, diversity is so much a part of life that employees take it for granted.

"I'm from Colombia," says Alma Emerson, a systems project manager at Florida Power & Light Co. in Juno Beach. "In my group, I have folks from India, Jamaica, Cuba, Russia, Panama, and we have African-Americans and

Top 10 *Best Places to Work in IT for diversity*

Rank	Company name	% of female IT staffers	% of female IT managers	% of minority IT staffers	% of minority IT managers
1	Royal Caribbean Cruises Ltd.	31	44	52	54
2	Georgia-Pacific Corp.	38	31	37	41
3	Florida Power & Light Co.	36	38	42	33
4	PBS	26	15	46	50
5	Teco Energy Inc.	40	57	20	21
6	Freddie Mac	45	39	36	29
7	The Home Depot Inc.	36	31	25	22
8	Nationwide Insurance Cos.	48	56	23	15
9	Harrah's Entertainment Inc.	47	43	19	27
10	USAA	39	31	34	22

an Anglo-American," she says. "We say we are a United Nations, and there are a lot of teams here like us. We have great group dynamics. There is no majority, so there are no minorities."

"Diversity is not really a project, it's

an attitude," says Dennis Klinger, vice president for information management at Florida Power, where the average tenure in IT is 11 years.

"We're sensitive that sometimes you have issues [with diverse workforces], so people are aware and, most important, we're receptive to listening and taking action. We try to make it an open environment so things don't get to the problem level before they get discussed," says Klinger.

But it takes more than sensitivity. There's a lot of work behind the diverse environment that Florida Power employees take for granted. That includes a diversity awareness program with training on various levels, including training in diversity leadership, which is a stated core competency for managers. There are also minority-targeted recruiting, scholarship and internship programs and mentoring programs, as well as human resources specialists who meet regularly with new hires to be sure their careers stay on track.

Later in their careers, Klinger's lead team takes over. "You really have to work on people in the lower/middle levels to make sure they don't get lost," he says. To that end, the management team nurtures high-potential people, including minorities, Klinger says.

"My lead team of direct reports and I get together and say the names out loud and talk about these people as a group," Klinger says. They ensure there are no barriers to their success, give them special training as needed to move them along and assign them to projects where they can make a name for themselves. "It's not science, but it works," Klinger says.

In Cuban communities, family is everything — which can cause some

excessive stress on an IT worker who is in high demand at work.

"My family is what life is about," says Juan Lopez. He had been a data architect at Miami-based Royal Caribbean less than a year when he had to choose between keeping his job and resolving a family problem that required a move to Washington.

But when he sadly told his manager, Max Schmidt, about the situation Schmidt made some quick phone calls, then told Lopez, "If you want to work with us, we'll work with you."

Royal Caribbean set up Lopez to work remotely. "That was the last thing I expected. It's a happy ending," he says. "In about a year, I'll be back."

Lopez's happy ending is largely due to the leadership of Tom Murphy, CIO at Royal Caribbean. "I have a philosophy that we all have real lives, and our management team needs the maturity and wisdom to treat people as the professionals they are with great respect to personal and professional needs and great flexibility," he says. "If someone's baby is sick, you know they've got to do what they've got to do." That applies to work as well as personal challenges, he adds.

Nurturing differences is the only way to go in the cruise business. "Our whole operations, our everyday life is about this," says Bernard Gay, vice president of enterprise technology and operations and a black man who hails from the Bahamas.

"We have people from well over 50 countries, and because IT is so immersed in the business, we find ourselves immersed in a blend of nationalities," Gay says. "Our daily interaction forces diversity and understanding of how you need to be with diversity. It forces you to live the culture." ■

MOREONLINE

To successfully foster diversity, employers must be flexible.
www.computerworld.com/bestdiversity



DAVID GONDREAU, a systems analyst at Teco Energy, says his fellow employees have been very understanding and supportive of his needs as a quadriplegic: "It's more than just work, it's family."

JIM STEM/SILVER IMAGE

100 BENEFITS 100 BEST PLACES TO WORK IN IT

TO THE CASUAL observer, Richard Wight's Fridays may seem anything but exciting. A trip to the local Home Depot. A stop at the town dump.

Some work on the addition he's putting on his home.

But it's the very tedious nature of the day that makes it so exciting for Wight, a stage management administrator at State Street Corp. in Quincy, Mass. Thanks to Boston-based State Street's flexible schedule benefit, Wight works from 6 a.m. to 4 p.m. Mondays through Thursdays and takes Fridays off. So Fridays have become errand days, which frees up Saturdays for relaxing family activities, such as coaching his son's soccer team.

"Being a parent's a one-shot deal, so you get it right the first time," says Wight. A great attitude in theory. But for most people, it's not as easy as it sounds. As work demands increase, many struggle to find enough time to spend with their families. It seems to be a problem that each of *Computerworld's* Top 10 Best Places to Work for Benefits are trying to address in their benefits packages.

Flexible work hours, telecommuting and family-friendly offerings such as adoption assistance, domestic partner benefits and child and elderly care are among the benefits that the best places to work offer. They also offer time-saving services, such as on-site concierges, dry cleaning, oil changes and cafeterias that prepare dinners to go.

Companies must also be practical, and the fact remains that money talks. Stock options, matching 401(k) contributions and bonuses are mainstays at top employers such as UnitedHealth Group Corp. and Lockheed Martin Management & Data Systems (MD&S). And despite the slowing economy, these companies have all made benefits a top priority that doesn't fall victim to company cutbacks.

The costs can be significant, but the payoff can be even greater. At Freddie Mac, for example, the turnover rate is an uncommonly low 7.2%.

"Freddie Mac believes the rewards of working here are made up of three things: Your compensation, benefits and the work experience," says Laurie Dalton, director of benefits. "We're an environment that understands the varied needs of our employees."

The McLean, Va.-based financial services firm offers a laundry list of benefits, including one that is starting to become a staple of many packages: lactation rooms where women can privately breast-feed or pump milk.

The company also offers new mothers a free consultation with a lactation expert, gives new parents beepers and has highchairs, coloring books and crayons in the cafeteria, according to Laurie Dalton, director of benefits. It's all a part of the family-friendly environment Freddie Mac works to foster. "You see children a lot," she says.

Culture Club

At CDW Computer Centers Inc. in Vernon Hills, Ill., the customer doesn't come first. Employees come first. That philosophy is what Art Friedson, vice president of co-worker services, calls the circle of service: If we all take care of our co-workers, they'll take care of our customers, he explains.

In order to create such an environment, CDW's IT department goes to great lengths to build camaraderie, says Executive Vice President and CIO Jim Shanks. That's where activities such as WhirlyBall come in. Once or twice a year, the department dukes it out for the WhirlyBall title, with employees hopping into bumper cars,

It's getting more costly for top employers to stay ahead of the competition with their benefits packages. But they know large investments in employee perks will reap huge payoffs. By Melissa Solomon

BETTING ON BENEFITS

wickets in hand, trying to whack a whiffle ball into a basketball hoop.

"Some people are great at scoring, other people are just great at hitting everyone," says Shanks. And the next day, everyone comes in "just bruised and battered with the hugest smiles on their faces."

Activities are also an important part of the benefits package at State Street. The company regularly gives employees discounted tickets to sporting events and theme parks. With an IT department of 2,800 people, such tokens go a long way toward making the workplace feel a little more personal, says Amy Gutschenritter, senior vice president of IT governance.

"You have to see 1,500 State Streeters sitting in the bleachers at a Red Sox game," says Julie Haskell, manager of work/life.

Because of the nature of its industry, Minnetonka, Minn.-based UnitedHealth offers a long list of health and wellness benefits, such as an employee assistance phone and e-mail service through which workers can get

Top 10

Best Places to Work in IT for benefits

Rank	Company name
1	UnitedHealth Group Inc.
2	Charles Schwab & Co.
3	State Street Corp.
4	CDW Computer Centers Inc.
5	FedEx Corp.
6	Freddie Mac
7	Lockheed Martin Management & Data Systems
8	Nationwide Insurance Cos.
9	Prudential Financial
10	PricewaterhouseCoopers

around-the-clock advice from nurses.

Sabbaticals, personal leaves and maternity and paternity leaves are also popular. One benefit that Freddie Mac IT project manager Judy Lubnow says she's grown to love is the ability to buy extra vacation time, with equivalent compensation deducted from her pay-

checks. That lets her have five weeks a year away from the office.

State Street has a similar program.

Prudential Financial not only offers a leave after an adoption, but it also gives time off during the adoption process, says Dave Fitzgerald, vice president of human resources for operations and systems at the Newark, N.J.-based company.

Prudential doesn't just pay lip service to work/life balance, says Fitzgerald. The company rewards employees who do an exceptional job at balancing work and life. Rewarding those who coach their kids' sports teams or volunteer to serve on their town governments' boards, for example, sends a message to the entire staff that personal time is important.

"I think it starts at the top," Fitzgerald says of the emphasis on work/life balance at Prudential. "It just spreads throughout the leadership and down to everybody at Prudential that this company cares about who they are."

At Freddie Mac, the IT department helps manage the ever-evolving benefits package. This spring, the company rolled out a Web portal with details about all the benefits that workers receive, or, as Dalton puts it, the total value of working at Freddie Mac.

Training is another popular offering.

"What we found... is that critical to the IT person is the quality of their leadership," says Pamela Hansen-Hargan, vice president of human resources at King of Prussia, Pa.-based MD&S. The company has a number of technical and leadership development programs as well as roundtable and one-on-one mentoring relationships.

"The leadership training they've offered me has been tremendous," says

Benefits offered by the 100 Best Places to Work in IT

401(k)	96%
Flexible hours	95%
College tuition reimbursement	91%
Employee assistance programs	91%
Offering/paying for continuing/executive education programs	91%
Individual employee performance bonuses	90%
Employee referral bonus program	90%
Pretax spending accounts to pay for uncovered medical expenses	90%
On-site cafeteria	89%
Reimbursement for technology certification	86%
Telecommuting options for employees	85%
On-site fitness center or fitness membership reimbursement	83%
Paid family leave	83%
Profit-sharing or employee stock ownership program	80%
Comp time for overtime hours worked	77%

Sondra Barbour, a 15-year veteran of the company. MD&S gives all managers a 13-module course spanning nine months, which, says Barbour, has helped her move up through the ranks to her current position as manager of e-transformation.

Leadership training doesn't just benefit those who move up the ranks, it also helps build morale, says Bob Dapper, senior vice president of human capital at UnitedHealth. "I don't think people identify with companies," he says. "I think people identify with people," so having managers who empower employees goes a long way.

Two secrets behind most successful benefits packages are regular employee surveys and informal conversations with workers. State Street, for example, added domestic partner benefits because of comments from workers. And CDW decided to offer lactation rooms

based on suggestions from focus groups that Friedson runs for new mothers returning from maternity leave.

"A lot of the things that people ask for are not big, expensive things," says Friedson, pointing out that some of

the most popular offerings include free on-site dry cleaning and employee discounts at stores and restaurants.

The top 10 also look closely at what their competitors are offering, so they can lead the way in terms of benefits. They also work with outside consultants and human resources associations to get new ideas.

But, says Jim Hudack, CEO of UnitedHealth's technology division, offering the right benefits is not rocket science. An organization just needs to listen to its employees. "And our IT people are not shy about saying what they think," he says. ▀



STATE STREET'S RICHARD WIGHT takes advantage of his employer's flextime benefit to work on his house.

WEBB CHAPPELL

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Fish

BY LEE COPELAND GLADWIN

DEAD FISH don't tell tales. But a growing number of company employees are sharing anecdotes about greater enthusiasm, job satisfaction and productivity, after having adopted a management technique that stems from tossing about dead fish.

The management philosophy began with a corporate learning film called *Fish!* in June 1998 that documents the workstyle of fishmongers at the Pike Place Fish Market in Seattle. The fish sellers toss trout and salmon throughout the market in an upbeat and playful style. The idea behind the technique is to transfer that type of enthusiasm to the business world by encouraging employees to adopt a playful attitude about work, and for workers to go to extra lengths to meet a customer's needs.

That film also spawned a book — *Fish! A Remarkable Way to Boost Morale and Improve Results* (Hyperion, March 2000), by Stephen C. Lundin, Harry Paul and John Christensen — that provides concrete steps to apply those concepts to managing a business or department.

The Guts

The book tells the fictional story of a burnt-out department head charged with managing a rough-and-tumble group of employees. The character stumbles into Pike Place Fish Market during her lunch break to discover a crew of high-energy and joyous fishmongers at work. She takes the ideals she picks up back to her motley corporate crew, in an effort to motivate the lackluster bunch into happier and more productive workers.

The Fish philosophy is based on four concepts: choosing one's attitude, playing at work,

DEFINITION

Fish is a management philosophy that originated at the Pike Place Fish Market in Seattle, where fishmongers playfully toss around trout and salmon. The idea is to transfer that enthusiasm to the business world by encouraging employees to adopt a playful attitude about work and to go to extra lengths to make a customer's or a colleague's day special.



HOLY MACKEREL! With two-handed precision, Jaison Scott air-expresses a salmon at Pike Place Fish Market in Seattle, whose upbeat and playful style toward work is featured in the management learning film *Fish!*

making a customer's day and being present. For example, choosing your attitude incorporates several ideals, such as demonstrating personal accountability, being proactive about work tasks, not acting like a victim and bringing your best self to work.

"Fish is really about being present and conscious at work," says Christensen, a filmmaker and CEO of Chart-House International Learning Corp., a management consultancy in Burnsville, Minn., which produced the

Fish videos and literature.

Christensen believes that the Fish philosophy applies particularly well to the technology realm.

"Let's face the fact that most IT professionals work in their own space, and it's easy to not be engaged in what you're doing," he says. "With Fish, you ask yourself, 'Are you just going through the steps or being in the moment?'"

According to Christensen, it's easy for IT professionals — especially programmers — to become isolated by the type of

work that they do. Fish reminds workers to make a conscious decision to enjoy what they're doing, with the hope that this kind of focus will unlock creativity and problem solving and generally improve the work environment.

The Bait

Several large companies, including Ford Motor Co., AT&T Corp. and State Farm Insurance Cos., have taken the bait and made the Fish philosophy part of their training programs.

John Little, organization de-

velopment manager at Ford, introduced the Fish philosophy to the materials, planning and logistics division at the automaker in April last year. Just like the main character in the book, Little says his division needed a morale boost.

"This is a division with a history of apathy and not wanting to get involved," Little acknowledges. "A lot of people thought, 'It's not OK to have fun here.'"

Little focused on the core Fish concept of attitude first, prodding colleagues to start asking new questions about how to approach their work with joy and enthusiasm.

"I asked them to hallucinate with me for a minute," Little recalls. "What if it were possible to have fun here; what would that be like?"

A year later, Little says, high-fives are rampant throughout the division at Ford, along with other reminders from the Fish seminars that he has conducted, such as jeweled fish pins and posters.

Melville, N.Y.-based Arrow Electronics Inc., the world's largest distributor of electronic components with \$13 billion in sales last year, introduces the Fish philosophy to all of its new employees at its U.K. offices.

"The nature of MIS is that they do their bit to write applications, with little interaction with colleagues," says William Hope, training manager at Bedford, England-based Arrow Electronics.

Hope says the Fish techniques have helped Arrow's IT staff develop better rapport and have energized the firm's customer service staff. He measures the success of the program by the heightened energy he feels at the office.

"It was hard to get their buy-in and recognition that there's an element of choice in one's attitude," Hope says. "We got people to lighten up." ▀

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JOE AUER/DRIVING THE DEAL

Not in the Contract, Not Part of the Deal

IF IT'S NOT PART OF THE CONTRACT, it's not part of the deal.

This is one of 10 truths in technology deal making [Business Advice, June 4], and it's an important one whenever you negotiate, regardless of the state of the economy or your relationship with a vendor.

The potential consequences of forgetting it make it all the more critical. Some have learned this the hard — and costly — way. Many times they have to get into a dispute with a vendor to discover that a clause is written into the vendor's contract, right near the signature line.

Overlooked clauses cause countless problems. Here's one way to counter it: When you issue a request for proposal (RFP), include a comprehensive description of your requirements, and make it clear that you expect all potential vendors to respond to every requirement. In order for the vendor to be in the running, its response to your RFP require-

ments must be included as part of a contract. Also, announce that contracts will include any additional vendor representations and inducements that you deem important. All of it is part of the contract, which is the only criteria you should use in selecting a vendor. And be sure you reiterate these ground rules throughout the vendor sales campaign. You may be surprised — this eliminates a lot of superfluous sales posturing, unrealistic user expectations and other unnecessary representations.

At some point in the discussions, you can offer an alternative. For those naive vendors willing to delete the "if it's not

in the contract, it's not part of the deal" provision, you can incorporate things outside the contract into the deal, including verbal assurances of the vendor's promised results and "guaranteed" success for the project. Few, if any, vendors will accept your offer, but it does make your point.

In addition, your RFP should contain a contract. For the best results, make it *your* contract instead of a standard vendor contract. And have every vendor respond to every provision in one of three ways: Accept the provision, reject it or accept it with specified modifications.

Also, make their responses to the contract a large percent-

age of your evaluation of them. Judge them on their contractual willingness. Why make a decision without paying attention to a vendor's willingness to back up everything in the contract?

A second truth, one of almost equal significance, is that it is *not* a relationship of trust and it is *not* a partnership. If you're unsure about that, ask your attorney what defines a legal partnership. For one thing, it involves being liable for each other's actions. This isn't what a vendor contract is about. Read one and you'll agree: It's not a relationship of trust; it's one of mistrust.

This is a relationship where a vendor drafts a document that protects itself and passes the risk on to you. At some point, the vendor will say to you, "Trust us." Ask yourself if it has shown any trust. In many cases, the

answer is, of course not. So, forget the fantasy of a vendor "partnership."

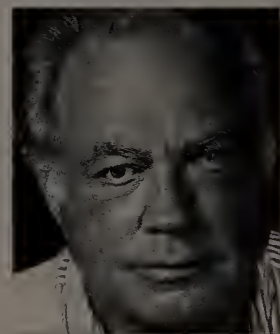
That doesn't mean you can't have a good, professional relationship with a supplier.

Just because it's not a relationship of trust doesn't mean it's all bad. But we have a tendency to let down our guard when we think about a relationship of trust.

Along the same lines, I've heard customers say, "We're partnering with them." Don't believe it.

When a client tells me that he's partnering with a vendor, I say, "Could I see your partnership agreement?" Better than 99% of the time, it isn't a partnership and it certainly isn't a relationship of mutual trust.

These two truths will go a long way in supporting your deal-making efforts. Watch for future columns with more truths. ▀



JOE AUER is president of International Computer Negotiations Inc. (www.dobetterdeals.com), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High-Tech Acquisition Professionals. Contact him at joea@dobetterdeals.com.

BRIEFS

PC Sales Drop

PC sales are going to be bad this year. How bad? Look for sales in the U.S. to slide 6.3%, according to a recent report by IDC, a Framingham, Mass.-based research firm and sister company to *Computerworld*. Most of the drop will be fueled by sagging consumer spending, down 17.3% in the U.S., the report says.

FTC Fights ID Theft

The Federal Trade Commission (FTC) plans to turn to the Web next month to combat identity theft by officially unveiling its Know Fraud initiative.

The Know Fraud Web site will be a one-stop spot for victims to report

and follow up on stolen identities. Three of the country's four top credit card agencies have signed up to print the logo and a toll-free reporting number on customer statements, according to Bob Kuykendall, program director on loan to the FTC from the U.S. Postal Inspection Service. For a sneak peak, go to www.consumer.gov/knowfraud.

Hospital Taps CSC

The Childrens Hospital Los Angeles recently signed a seven-year, \$100 million outsourcing contract with Computer Sciences Corp. (CSC) in El Segundo, Calif. The IT consultancy will manage the hospital's business and clinical information systems, including mainframe and midrange computers, 1,800 desktop computers, help desk operations, voice and data communications, and application maintenance and development.

Coat Giant Switches To Linux System

Burlington Coat Factory Warehouse Corp. recently chose a new Linux-based point-of-sale system from retail and banking systems vendor Wincor Nixdorf in Austin, Texas. Wincor Nixdorf will supply its Beetle retail systems running on Red Hat Linux through a wireless LAN in each store. The Burlington, N.J.-based clothing and accessories retailer will also get support and peripheral devices in the deal.

CRM Satisfaction

Customer relationship management (CRM) initiatives aren't failing as often as some think, according to a recent study by Cutter Consortium, an IT consulting firm in Arlington, Mass. Of 159 IT managers surveyed, primarily from Fortune 1,000 firms

and government agencies, more than three quarters said they are satisfied with their organization's CRM efforts. When asked what aspect of CRM is most important, 38% of respondents chose "360-degree view of the customer," 21% chose "personalization" and 15% chose "one-to-one marketing."

BP Expands Accenture Contracts

BP PLC has expanded its \$300 million outsourcing contracts with New York City-based Accenture for financial and administrative services by signing another IT deal worth \$175 million. To address BP's business integration needs following its merger efforts with Amoco, Burmah Castrol and Arco, Accenture is expected to design, build and run critical business systems that support BP's U.S. downstream back-office business processes.

Under the nine-year deal, Accenture's Houston-based Senergy Business Center will provide BP with system support starting next month. The systems covered by the contract include accounts payable, general accounting, treasury, financial analysis and application management. London-based BP is an international energy company with exploration headquarters in Houston.

South Dakota Farms Out HR Apps

The state of South Dakota recently outsourced its human resources applications to St. Paul, Minn.-based Agilera Inc. to move away from paper-driven processes. Englewood, Colo.-based Agilera will integrate and host human resources, payroll and Web self-service applications for employees and managers, allowing the state to reduce its software maintenance and IT support needs.

TECHNOLOGY

HACK OF THE MONTH

The rate of credit card fraud over the Internet is three times higher than the rate for all credit card transactions. On-line merchants need to protect themselves, or they could be sunk by fraud artists. **► 42**

SECURITY JOURNAL

When a federal agent presents a court order to allow electronic surveillance, security manager Mathias Thurman must scramble to protect his company's network while complying with the letter of the law. **► 44**

FUTURE WATCH

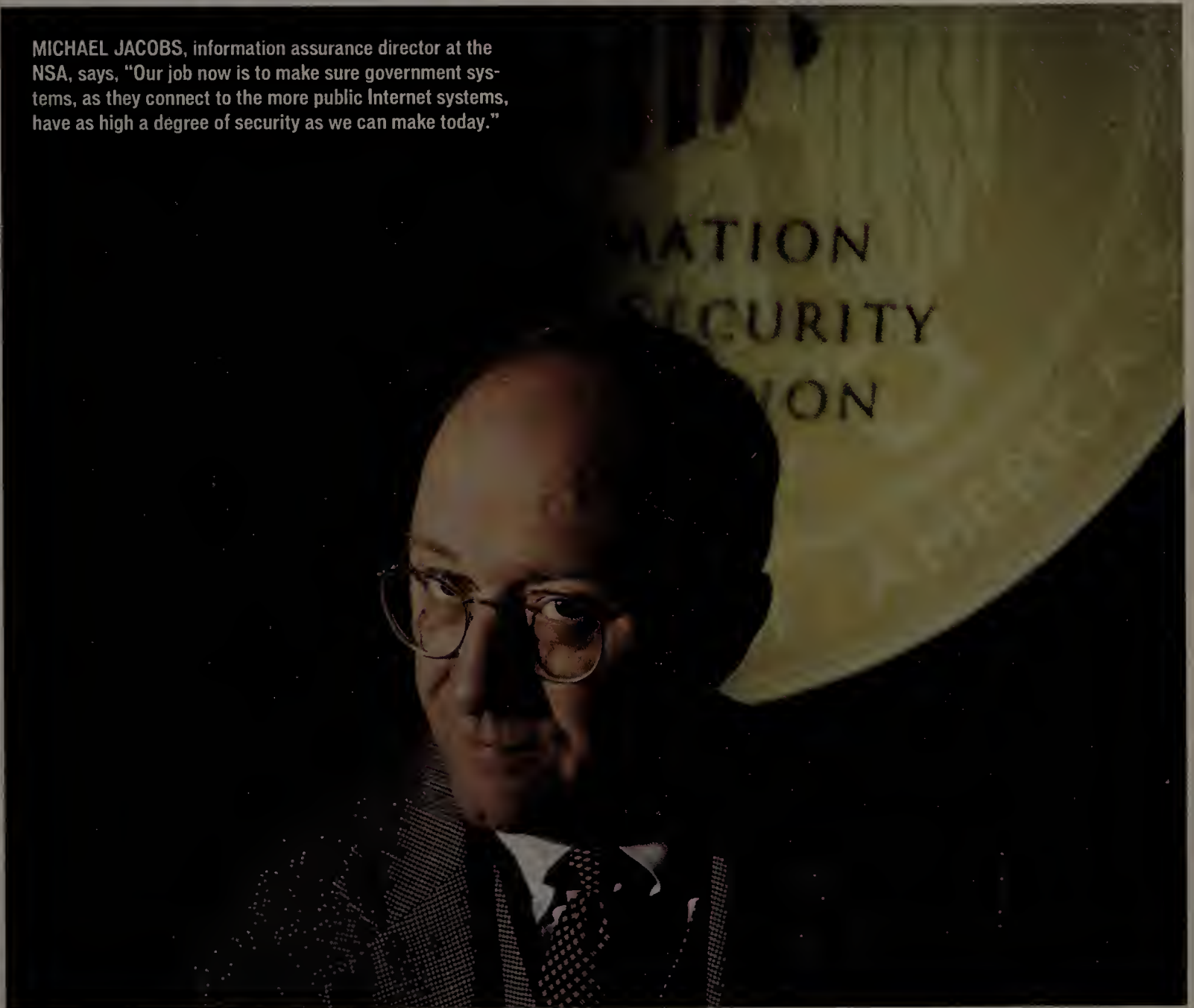
Computer scientists say the humble ant heralds a revolution in software design. Rather than relying on complex, centralized logic, systems that mimic ant behavior use many small, autonomous software agents. Acting on the simplest of rules, these agents together can solve problems that are enormously complex as a whole. **► 46**

SERVER CHOICES

In an increasingly fragmented server market, IT departments are finding more options available in e-commerce servers that can handle back-end processing and integrate well with legacy systems. **► 48**

MICHAEL JACOBS, information assurance director at the NSA, says, "Our job now is to make sure government systems, as they connect to the more public Internet systems, have as high a degree of security as we can make today."

KATHERINE LAMBERT



KEEPER OF CLOSELY GUARDED SECRETS

IN HIS 35-YEAR TENURE at the National Security Agency, Michael Jacobs has watched the agency shift from tightly controlled computing and proprietary code to distributed computing and commercial products. Jacobs, now the NSA's information assurance director, has made a career out of providing a secure IT infrastructure to his constituents. He talks with *Computerworld* about how any organization can benefit from his initiatives.

50

BRIEFS

Sharp PDA to Feature Java/Linux Browser

Access Co., a Tokyo-based embedded software vendor, will provide a new version of its NetFront Internet browser for Mahwah, N.J.-based Sharp Electronics Corp.'s new Java/Linux based portable digital assistant (PDA). The new browser will be used in Sharp's Zaurus PDA running Linux/Java, which is expected to be available in the fall.

BEA Unveils Updated Application Server

San Jose-based BEA Systems Inc. has unveiled its WebLogic Server 6.1, an update to its application server with beefed-up integration to legacy systems and WebLogic Portal 4.0. WebLogic is compliant with Sun Microsystems Inc.'s Java 2 Enterprise Edition specification and supports wireless development. WebLogic Server 6.1 is slated to ship next month. WebLogic Portal is expected to ship in the fall.

Insignia Launches Java for iPaq

Insignia Solutions Inc. in Fremont, Calif., said that its Jeode Java run-time environment for Compaq Computer Corp.'s iPaq Pocket PCs is available at Compaq's Web site. Insignia said Jeode will be the first authorized Java virtual machine available through a Pocket PC maker.

Firms Team Up for Thai Wireless Net

Paris-based Alcatel SA has announced that it entered into a \$332 million agreement with Paris-based wireless company Orange SA and Bangkok, Thailand-based Charoen Pokphand Group to build a wireless network in Thailand. The network will be based on General Packet Radio Service technology, also referred to as 2.5G, which operates in the 1,800-MHz range.

DEBORAH RADCLIFF/HACK OF THE MONTH

E-Merchant Beware

AFTER CREDIT CARD FRAUD started hitting Dave Bundtzen's Internet job-placement business at a rate of 3.5% of all transactions, a single fraudulent charge of \$19.95 wound up costing him \$64.90.

Credit card companies measure fraud in chargebacks —

the transactions involved in clearing up the bogus charges. On the Internet, those chargebacks run more than three times higher than all other credit card processing mediums combined, according to estimates by Visa International.

A fraud rate of 1% (of gross credit card sales) earns a merchant a "high risk" rating. High risk means high chargeback fees to the merchant. And it's those charges, along with return fees to customers and returned merchandise, that nearly put Bundtzen's company, Phoenix Interactive, out of business.

"Merchants are 100% re-

sponsible for the chargebacks in card-not-present charges. Carders are putting the smaller e-merchants out of business. And no one is going after the carders," says Dan Clements, CEO and founder of CardCops in Malibu, Calif.

Clements has been tracking a growing number of Internet "carders" — credit card fraud artists — who are emerging from or joining forces with criminal clans in Russia, Japan and the U.S. Last month, Clements formed CardCops to provide an investigative service for e-merchants.

Other services are popping up around electronic

retail fraud losses, as well. For example, CyberSource now offers an e-merchant fraud-detection scoring system based on behavioral and pattern analysis. With this system, consumer orders at 3 a.m. using a post office box for a shipping address would get a "high probability of fraud" score.

And the CyberSource system ties into Visa's neural fraud-detection network that tracks fraud reports. This network improved Visa card transaction

accuracy by more than 50%, according to Jean Bruesewitz, senior vice president for advanced risk solutions at the company.

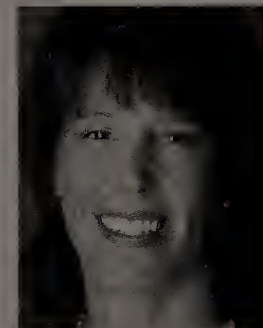
Also, Visa last fall piloted a payer authentication program called 3D Secure that's based on digital certificates. This directory service verifies a shopper's authenticity through issuing banks participating in the program.

"If you look at the difference between store transactions and Internet transactions, what you're really trying to do is find a

way to authenticate the customer," Bruesewitz says.

"Through 3D Secure, the actual identification is verified by Visa."

Clearly, there are a lot more resources than in the early days of e-commerce when Bundtzen started



DEBORAH RADCLIFF is a Computerworld feature writer. Contact her at deborah_radcliff@computerworld.com.

Users Slow to Adopt Bluetooth Products

Chip prices remain too high, say analysts

BY MATT HAMBLIN

The short-distance wireless technology called Bluetooth was unveiled years ago, and products using it first emerged at Comdex/Fall '99. Despite wide interest in using the technology to help eliminate annoying cables connecting cell phones, handhelds and other personal devices to printers and other machines, Bluetooth hasn't yet caught on.

Analysts say the delay is a classic problem of a good technology that hasn't yet found its market, mainly because early Bluetooth chips and products are expensive. And some users still worry that Bluetooth could interfere with networks

conforming to the 802.11b standard, even though vendors claim that such concerns are overblown.

At the recent Bluetooth Congress 2001 in Monaco, Palm Inc. announced a postage stamp-size Palm Bluetooth card that will allow wireless communications between Palm m500 and m505 handhelds and other Bluetooth-enabled devices within 30 feet.

The Palm device is going to sell for about \$150 when it ships by year's end, said the Santa Clara, Calif.-based vendor. Some internally wired Bluetooth laptops and PCMCIA Bluetooth cards are available, but most of these add-ons

cost \$100 to \$150, analysts said.

"Who's going to pay \$150 for a Bluetooth card when it's not that inconvenient to pay much less and use a cord?" asked Peter Firstbrook, an analyst at Meta Group Inc. in Stamford, Conn.

As a result of the still-high cost of chips, which run \$27 to \$50 for manufacturers, Meta Group has delayed its projections for when Bluetooth will be widely in use to 2004. In 1999, the firm said ubiquitous usage would arrive in 2002.

Alan Reiter, an analyst at Wireless Internet and Mobile Computing in Chevy Chase, Md., said he agreed that Bluetooth "is at least two years late," adding that chips were supposed to cost \$5 by now but still cost \$30 on average. ▀

out. He averted his crises the old-fashioned way: cross-checking incoming orders through his company's own database and using improved call center screening techniques. In so doing, he's now well below the 1% high-risk credit threshold again.

"It really is 'merchant beware,'" says Tom Arnold, CEO of CyberSource. "Small to medium-size e-commerce sites are going out of business" as a result of credit card fraud.

Statistics linking e-merchant failures to credit card fraud don't exist. But some numbers speak for themselves. Meridien Research estimates Internet credit card fraud rates at 10% of all Internet sales in 1999. Without intervention, Internet fraud will have cost U.S. merchants \$30 billion by 2005, according to Meridian.

With losses like these, only the mighty withstand. ▀


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Manager Locks Down As the Feds Move In

A hacker attack via a stolen laptop puts Thurman's organization in the middle of a federal investigation

BY MATHIAS THURMAN

THE HACKER INCIDENT I described in my last column [Technology, June 4] has taken several new turns and has been keeping us very busy. Our company was the victim of an incident in which a salesperson's stolen laptop was used to dial in to our network. The intruder then used us as a launching point to hack into other computer networks. In one case, the intruder gained access to a financial institution and transferred credit card account information to a hacked university computer system in the Midwest.

The compromise of our dial-up system was due to an employee's laptop configuration. The system was set to dial in to the company's modem bank, and the "remember password" box was checked within the connection dialog box.

Normally, we would immediately shut down the account after detecting such a break-in. But the three-letter agency involved had other ideas.

Rules of Engagement

An agent served a subpoena and search warrant, which provided enough information to justify the subsequent issuance of what's called a Title 3 wiretap order. From what I understand, this order gives a law enforcement agency permission to monitor communications without a party's knowledge. In this case, the communication was by the actual dial-up connection used. The order was good for 10 days.

Our general counsel confirmed that the Title 3 order was valid and that I needed to cooperate fully with the agency. The problem, however, was that our only involvement was the dial-

up access to our segregated network. I wanted to be sure that the hacker didn't gain access to any of our other critical infrastructure, but I didn't have the manpower to do so quickly. I spoke to the CIO, who approved the hiring of consultants to help me conduct a thorough security assessment. Once I had them on board, the consultants set about assessing the network. The team spent three days (at \$150 per hour) assessing our routers, switches, modem bank configuration, RAID and other access servers and accounts.

They did an awesome job and actually found security holes in other parts of our network that I didn't know existed. Specifically, they discovered a misconfigured terminal server, which could allow unauthenticated access to some of our critical domain name servers and mail servers.

We use terminal servers as a way to access our Unix systems in the event that

our Internet connectivity goes down. The terminal server ports are directly connected to the serial ports on the back of the Unix servers. This particular terminal server wasn't configured to force authentication to the port and allowed direct access to the Unix servers.

This is a bad thing, especially if an administrator forgets to log out of a session and leaves a root-level log-in prompt available. We quickly fixed the problem and returned to the task at hand.

The conclusion I was looking for was that the intruder hadn't gained access to anything other than the dial-up infrastructure. Happily, the final verdict was that indeed there had been no other unauthorized access. And because we were used only as a launch point for the

attacks, there was no traffic on our network for the agency to monitor.

The agent decided that he was interested in being notified only when the hacker actually logged in to our network so that he could take appropriate action. The law enforcement agency brought in a consultant who helped configure some scripts and a separate server to send out a page whenever the offending account logged into the network.

Apparently, the agency also had installed packet-sniffing devices to analyze network traffic at the other compromised locations, and it was going to use the dial-up account to help correlate access information. The agency also wanted to trace back the telephone connection. When the hijacked account logged in, the agent receiving the page would contact the local telephone company and trace the call back to its point of origin.

Game Over

Unfortunately, the hacker didn't log in to the account again, and after 10 days, the wiretap order expired. The judge didn't want to extend the order, so the agent and his consultant came by to collect their equipment. The agent suggested setting up a "honey pot" to try to lure the hacker to our site, but I didn't want to go down that road. Honey pots just give hackers a reason to stay at a site.

It's been a week since the law enforcement officials left. I haven't heard from them, and I doubt I ever will. Now I must write up and present a post-mortem report to the executive staff, describing the incident and recommending policies and procedures to ensure that something like this doesn't happen again.

In retrospect, if the sales manager or IT staff had let me know about the stolen laptop, we could have disabled the dial-up account immediately and prevented the intrusion. Unfortunately, that's not part of our current policy.

One good thing did come from all this: The incident gave me a solid justification for implementing SecurID digital token access to dial-up accounts



SECURITY MANAGER'S JOURNAL

THISWEEK'S GLOSSARY

Honey pot: This is a decoy server that's configured to distract hackers into attacking the wrong system. These systems present tempting targets to distract the hacker from production systems and give the company's security staff more time to respond. If implemented correctly, honey pots also can be used as effective tools for data collection and criminal prosecution.

Packet sniffing: This is a term used to describe a system or methodology to eavesdrop on network traffic as it traverses a network. Commercial hardware and software tools for packet sniffing are also called network protocol analyzers. The most commonly known one is Sniffer from Network Associates Inc. in Santa Clara, Calif.

LINKS:

www.recourse.com: If you're looking for a commercial honey pot, I suggest checking into Redwood City, Calif.-based Recourse Technologies Inc. Its ManTrap product takes a unique approach and is worth a look.

www.tcpdump.org: Visit this Web site to download the TCPdump utility, a popular Linux packet-sniffing utility.

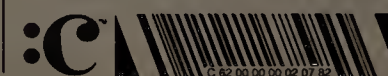
www.squirrel.com/squirrel/sun-stuff.html: Snoop is a popular packet-sniffing utility for Solaris systems. A downloadable copy is available at this Web site.

www.enteract.com/~lspitz/snoop.html: This white paper by Lance Spitzner is a good resource for reading about sniffers and the Snoop utility.

and establishing additional virtual private network access controls.

It's funny how an incident like this will open the eyes of the executive staff. Many companies go for years without an incident happening (that they know about). But it takes only one serious incident to wipe out years of work. ▀

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IT'S A DIFFERENT KIND OF WORLD.
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Computer scientists studying ants are using them as models for new distributed systems.

By Gary H. Anthes

"Go to the ant . . . consider her ways, and be wise."

— PROVERBS 6:6

COMPUTER scientists are doing just that, and they say the humble insect heralds a revolution in software design.

Rather than relying on complex, centralized logic, systems that mimic ant behavior use many small, autonomous software agents. Each acting on the simplest of rules, these agents together can solve problems that are enormously complex when viewed as a whole. Higher-level, or "swarm," intelligence emerges from those rudimentary rules in ways that would be difficult to program into conventional software.

Such autonomous systems have no single point of failure. Like ants that repair their nest if it's disturbed and columns of ants that route around obstructions, these systems adapt to unanticipated problems in a way that ordinary centralized systems can't.

Today, such systems are typically used for optimization applications such as factory scheduling and vehicle routing. For example, General Motors Corp.'s Saturn subsidiary uses distributed systems to control the flow of part assemblies. Instead of having each factory machine's actions pre-programmed and unvarying, Saturn's machines can sense the type and state of a part and adapt their actions on the fly.

Other applications draw on

different ant behaviors. For example, researchers are working on a way to analyze financial transactions based on the way ants sort and cluster their brood and their dead.

The technology is a decade old, but it's just beginning to blossom, says Doug Currie, president of Flavors Technology Inc., a Londonderry, N.H.-based company that sells agent-based systems. "It's a great way to leverage technology, because of the surprise factor — it does things you don't expect, but in a way that's natural," Currie says.

He adds that antlike systems will increasingly be used to design production lines, not just to control them. He predicts they could also have a use in medicine, where antlike agents could mimic the interactions of simple chemicals in the body and in drugs.



TUCKER BALCH, a robotics researcher at Carnegie Mellon: Autonomous software agents will empower us.

Individually, ants have primitive brains, yet collectively they run surprisingly sophisticated and efficient operations. With no central direction, they divide responsibilities among themselves, find food, build and maintain their nests, tend to their young and respond to attacks.

Using a few simple rules of logic, ants can find the shortest path to a food source. They lay down chemical scents, called pheromones, and over time the most successful paths — originally found by trial and error — are reinforced by the repeated deposit of pheromones.

Similarly, multiagent systems can solve routing problems by reinforcing good routes with "digital pheromones" and discouraging the choice of poor routes by allowing the pheromones to "evaporate." London-based British Telecommunications PLC has developed a method for routing data packets around a network that way.

Tucker Balch, a robotics researcher at Carnegie Mellon University in Pittsburgh, says the thousands of ants in his laboratory amount to a "library" of logic that can be applied to solving human problems.

"A multiagent system could be the stock market, or anything where there are thousands of individuals interacting with one another," he says.

Today, most agents have program logic built in from the beginning. But Balch says agents will become much more powerful as computer scientists enable them to learn from their environments. "These agents will empower us," he says.

Swarm intelligence pioneer Eric Bonabeau, chief scientist at Paris-based EuroBios, says much research and development remains to be done. "There is no clear understand-

ing of why it works so well in a number of cases, and no proof it is going to work in every situation," Bonabeau says. "But there will be more and more applications, as there is no alternative when you want to control armies of small, dumb entities."

There are also workforce barriers to overcome, says Van Parunak, chief scientist at the ERIM Center for Electronic Commerce in Ann Arbor, Mich. "Saturn is a good example, because it is able to diagnose itself and configure itself. The action it takes at any moment can't be predicted, and people find that disturbing," Parunak says.

And sometimes it isn't just factory workers who can't predict the behavior. "Systems of interacting parts have the potential to self-organize, but also the potential to chase their own tails, to go into random-like operation and otherwise fall apart," says Parunak. ▀

JOHN BRILLON

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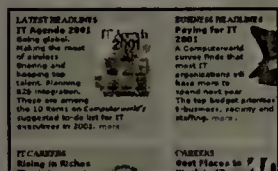
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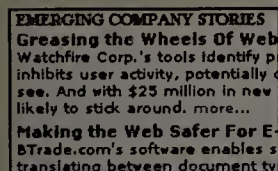
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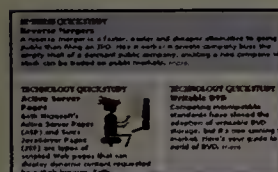
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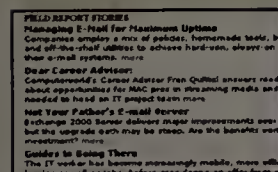
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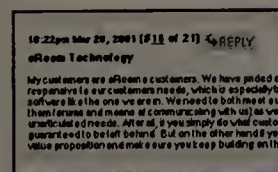
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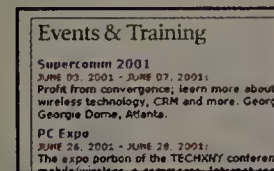
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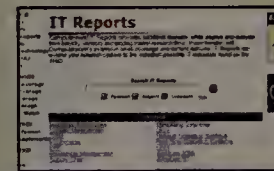
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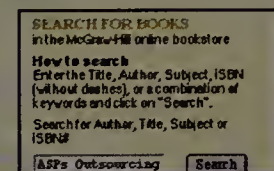
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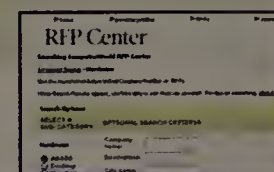
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THE WEB'S

A new class of e-commerce system is designed to bridge the divide between state-of-the-art Web servers and back ends rife with idiosyncratic legacy apps and unique business processes. Not surprisingly, no single product can do it all. By Steve Ulfelder

PICKING THE SERVER software that drives your e-commerce business can be a tough decision. Take a look at the leading e-commerce servers, and it's not easy to find a clear winner. "The technology's not much of a differentiator," says Larry Perlstein, an analyst at Stamford, Conn.-based Gartner Inc. "These guys have reasonably similar architectures. And we typically see implementation times of 60 to 120 days, regardless of vendor claims."

A report by Patricia Seybold Group Inc. indicates how specialized the e-commerce server market has become. The Boston-based consultancy separates the field into three groups, as follows:

■ **Buy-side servers** are typically used to implement purchasing processes.

■ **Sell-side servers** are application packages that handle key online business processes, from sales and marketing to customer service and fulfillment. The

Seybold Group report says that these "do for e-commerce what products like SAP R/3 and Oracle applications do for [enterprise resource planning] functions."

■ **Marketplaces** are exchanges that serve as intermediaries. Mountain View, Calif.-based Ariba Inc.'s Marketplace is one example.

For this field report, *Computerworld* spoke with users of sell-side e-commerce servers that do both business-to-business and business-to-consumer trade, although they're more often associated with the latter. Of course, not all offerings handle all the business processes mentioned above with equal aplomb. Vendors' histories and traditional strengths affect their Web commerce servers' capabilities.

For example, analysts say that the Dynamo suite from Cambridge, Mass.-based Art Technology Group Inc. capitalizes on the company's strength in personalization and that IBM's WebSphere Commerce Suite benefits from Big Blue's integration savvy.

However, middleware wasn't a significant factor

when J. Crew Inc. went shopping for an e-commerce server. "We looked at MQSeries," says CIO Paul Fusco, "but it was overkill. All we needed was a simple pass-through" from the server to the New York-based retailer's back end, which consists of an Oracle8i database running on a Sun Microsystems Inc. architecture.

Fusco says speed and personalization were key factors in J. Crew's decision to purchase Dynamo. "Speed is probably most important to us," he says. "When you look at the layer between the app and the database, it's important that it perform well with Oracle8i."

Fast Track, Faster Service

For some IT managers, even though they may not use all the features of their e-commerce servers, it's nice to know that the features are there for future use. Mazda North American Operations in Irvine, Calif., runs a bustling Competition Parts program for auto racers who drive Mazda Miatas, RX-7s and other cars. But the program hasn't printed a catalog since 1997,





ROSS KATZ, Web development consultant at Mazda North American, says he appreciates the scope and capabilities of IBM's WebSphere Commerce Suite.

SETH JOEL

and the small department was swamped by up to 100 calls per day. It was long overdue for a Web site.

Ross Katz, Web development consultant at Mazda North American, says the organization didn't want to simply throw the catalog on a Web page. Rather, it was deemed critical that the Web site tie in with inventory systems so customers could check on parts' availability in real time. And since they were going that far, the Competition Parts staff decided to do the entire transaction online. Katz says ordering, cataloging, payment processing, reporting capabilities and campaign management were all important.

Mazda evaluated the leading e-commerce servers but leaned toward WebSphere Commerce Suite, in part because the automaker was already an IBM shop. Mazda ran its Java-based inventory system, which IBM helped create in 1999, on an S/390 Parallel Enterprise Server.

WebSphere Commerce Suite Version 5.1, running on a Windows NT server, now underpins Mazda's

catalog. The catalog's contents reside in IBM's DB2 Universal Database. Stocking data comes from the company's inventory system, with IBM's MQSeries middleware facilitating communication between CICS applications on the S/390 and the catalog.

Mazda shied away from previous WebSphere Commerce Suite releases that included multiple languages. "We're an all-Java shop," Katz says. When IBM released the Java-only Version 5.1, "it was like the missing puzzle piece," he says.

Katz says that to avoid rewriting applications, Mazda customized its parts-availability inquiry so that it could be prompted by Enterprise JavaBeans to get the needed data. WebSphere Commerce Suite's Java programming model makes it easy to customize, he explains. That, along with the back-end integration with MQSeries and CICS, tipped the scales for choosing IBM's product, he says.

Though Mazda doesn't use all of WebSphere Commerce Suite's functionality (such as the globalization features, which let businesses use a single catalog to create sites for multiple locales), Katz enjoys the insurance: "Vendors come in with, say, catalog management software. I say, 'I've already got it!'"

New Meets Old

For large organizations with large amounts of data on legacy systems, integration is a key concern. About a year ago, Lowe's Cos., was seeking to modify its e-commerce infrastructure as part of an effort to re-tool Lowes.com, the Wilkesboro, N.C.-based home improvement retailer's Web site.

Matt E. Deeter, Lowe's vice president of Internet operations, says the company didn't believe any one e-commerce server suited its needs perfectly. Lowe's wanted to create on its Web site "visual cash registers" — Internet equivalents of what store employees see on their dumb terminals as they ring up sales.

Deeter's team favored this approach because it leveraged its existing databases and back-end functions. "When you looked at a Blue Martini or a Broad-Vision," Deeter says, "you had to almost sell your soul. . . . You had to put all kinds of different data in these single systems. How do you tie that back into legacy systems? Trying to integrate that would have been something we'd have had to spend a lot of time on."

According to Gartner's Perlstein, Lowe's experience is representative of others'. Until a year or so ago, he says, "people were building online systems as stand-alone entities — independent apps [not integrated with] the rest of the legacy back end." This often led to data synchronization problems. "They were extracting data out of legacy back ends for their Web systems. Integration was real tough," he says. But now, says Perlstein, the tide has turned. "Companies are saying they don't want to have two independent systems," he says. "They want a more fully integrated back end."

Lowe's wound up customizing OneSoft 4, a sell-side e-commerce suite from, McLean, Va.-based OneSoft Corp., to sit on top of the company's Microsoft architecture. The OneSoft software was modified to work with Lowe's thin-client, point-of-sale system, which runs on IBM AIX servers. Interestingly, Deeter says that in the integration with its own existing back end, Lowe's used "maybe 30%" of OneSoft's functionality. "We'd be sitting with their architects and they'd be saying, 'This isn't how we usually do [an implementation]. We said, 'Well, we're the customer, and this is how we want to do it,'" he says.

Although users' needs vary considerably, IT leaders have a core set of requirements for e-commerce servers. "People are moving back to first principles," says John Matranga, chief technology officer at Omicron Consulting Inc. in Philadelphia. They're demanding products that are scalable, easily maintained and that integrate well with existing databases. "Everybody's got a different angle," Matranga says. "Maybe someone's personalization is better, or their CRM or integration. Everybody's got a slightly different way of doing it, so you pick what's important to you." ■

Ulfelder is a freelance writer. Contact him at sulfelder@charter.net.

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WASHINGTON, 1964: John F. Kennedy had recently been assassinated. The war in Vietnam was heating up. And Michael Jacobs was looking for a job. When he read a college recruitment catalog from the National Security Agency (NSA), he jumped at the opportunity, eventually landing in the newly formed Communications Security Directorate (Comsec).

Keys, codes, ciphers and cryptanalysis were the order of the day, with a little linguistics and telecommunications on the side. But in his 37-year tenure at the NSA, Jacobs has watched Comsec's role (and its name) change to reflect a shift from tightly controlled computing and proprietary code to distributed computing and commercial products.

Now, Jacobs says, his IT organization has one foot in each world — the commercial and the proprietary. And to make sure commercial tools pass muster in terms of security, the NSA runs them through new software-testing programs. These programs, the Common Criteria Evaluation and Validation Scheme and the Cryptographic Module Validation Program, are part of the agency's National Information Assurance Partnership, a joint effort with the National Institute of Standards and Technology (www.nist.gov), IT product vendors and users.

Products must pass rigorous testing before earning a Common Criteria security rating. The ratings were developed to help the Fort Meade, Md.-based NSA, but they're also available to private-sector users. And because testing standards are international, buyers of evaluated products can deploy them more easily across the globe.

What are the differences between computing today and computing in the 1960s? Our history is in code-making. So you could say we began around World War II. The nucleus of this organization was formed by intelligence specialists and scientists who began building government machine and nonmachine systems. We no longer had to rely on commercial technology to produce any crypto [systems] the government used. We [also] designed our own messaging system: the Automatic Digital Network. So, if you were a government entity and you needed to secure your communications, you came to us, and we had a standard brochure of available crypto devices for voice, teletype, radio, phone. We had a monopoly.

We began to see some change in the '80s. Computers were playing a bigger role in the telecommunications and information environments. And now we had a lot of computer-based information management systems — sometimes directly connected to telecommunications systems. We were no longer a monopoly. Our competition went from none to dozens of commercial companies. We found ourselves trying to keep pace in an industry running at warp speed.

What were the resulting changes at the NSA? When we were a monopoly, we had the luxury of supporting uniquely developed systems, combined with the luxury of time to do it right. Some of your



Keepin

The National Security Agency is using protect systems and data, says Informa

development cycles could be as much as five years. Government systems lasted 20 to 30 years. So you had time to integrate and test the product to death. The security side of the development cycle was risk-averse. Now, we've got a risk-complex environment [because] we don't have the luxury of time. For example, firewalls upgrade every 18 months. So we have to be more agile in our approach to dealing with security problems. This has shifted the burden of security from the developer — us — to the customer. Instead of a risk guarantee, we deliver to the user a set of products configured for better security and we still have to say, "Oh, by the way, here are the residual risks you have to deal with now." Now, parts of the network continue to be secured by NSA. Where we rely on commercial technology, we have evaluated against the Common Criteria testing program, under our National Information Assurance Partnership in conjunction with the National Institute of Standards [and Technology].

The Common Criteria program distributes the vulnerability testing of commercial software to certified testing centers, with the software vendors picking up the tab. What was your reasoning behind this? Our job now is to make sure government systems, as they connect to the more public Internet systems, have as high a degree of security as we can make today. The Common Criteria is one of the most important vehicles we use to promote evaluation of vendor products against internationally recognized standards. We helped set those standards by collapsing into it our other criteria, mainly our "Orange Book" [<http://jcs.mil/htdocs/teinfo/directives/soft/ds5200.281.html>]. And we already had partnered with independent, certified testing labs through our Trust Technology Assessment Program for testing technology products against the Orange Book. All but one of those testing labs has recertified under the Common Criteria program.

The Common Criteria is one of the most important vehicles we use to promote evaluation of vendor products against internationally recognized standards.

MICHAEL JACOBS,
INFORMATION ASSURANCE DIRECTOR, NSA

How does the Common Criteria program help businesses? We've got around 45 products [www.niap.nist.gov/niap/services/validated-products.html] tested so far. These are commercial firewalls, operating systems, routers, intrusion-detection systems, etc. The testing centers run these products against a barrage of tests and assign them assurance levels [from zero to seven]. The higher the number, the more secure the product. Anyone who buys commercial products benefits from this.

How is it possible to test commercial software for security when the products can run in an infinite number of network configurations? This is an area we're working on: How do you put it all together as a system and determine the weak areas? How do you quantify those weaknesses? How do you overlay the new system on hardware and software? How do you determine procedures?

We have work under way to develop a standard of operational procedures to begin to address the system-level problems. We need to codify best practices and elemental understanding somehow and put that into a Common Criteria-like format. Then we need to get that into the hands of the industry to share some of the burden by testing for vulnerabilities at the system level, not just the product level. I would hope we have something in the industry for evaluation next year.

What other challenges do you face? One of our biggest frustrations is version control. We still can't get the [government user] customer to accept version control because they want the newest graphics and the fastest speed. Say we've optimized a new product and given the customer their guidelines that, if followed, will assure security to the best of our ability — then some administrator at the customer site changes something, and we have no way of knowing if they've just opened up a new vulnerability.

Your plight sounds similar to that of commercial businesses. Do you have any advice for them? First, recognize there is no longer any silver bullet. That's why we need evaluation of products. But you also need a deep assessment of your network configuration, procedural recommendations, policies and then technology if you want the best security you can get. All this must be done at a system or network level, rather than a component level. Then as you look at the components you want to add to your network, evaluate them against functionality, utility and value. Your network administrators and system security engineers need to know it takes a cross-disciplinary approach to bring all this to the user level. But since no one person knows it all, we take a team approach to do this — partnering our crypto specialists with our firewall specialists and network engineers, for example. ▀

ing Secrets

esting programs that will help it — and commercial IT —
on Assurance Director Michael Jacobs. By Deborah Radcliff

Authoria's Software Is All About Benefits

Start-up's Web knowledge base delivers individualized human resources data

BY AMY HELEN JOHNSON

IN FEBRUARY 1999, 120,000 employees of Norwest Corp. and Wells Fargo & Co. were worried about how a forthcoming merger would affect their benefits. Faced with the prospect of handling questions from the employees, the administrative arm of San Francisco-based Wells Fargo decided to implement a new knowledge-management system for its human resources call center employees.

Authoria HR, from Waltham, Mass.-based Authoria Inc., fit the bill, says Carol Johnson, manager of human resources projects at Wells Fargo's administrative headquarters in Phoenix.

The rapid three-month deployment was a success, she says, because it enabled service center representatives to quickly master the intricacies of the companies' former benefits plans, as well as the new combined benefits package. Even temporary workers were able to provide good service. "All they had to know was how to use Authoria," Johnson says.

Getting Personal

Tod Hayes Loofbourrow, Authoria's president and CEO, says Authoria HR's key advantage is that it offers personalized answers to employee questions. The application integrates with PeopleSoft Inc.'s human resources management database or any Open Database Connectivity-compliant human resources management database and extracts personal profiles that enable the software to individualize its answers. The product works both for call centers and as a Web-based self-service application.

Authoria offers a version

called Authoria Outsourcer for application service providers and one called Authoria AnswerWise for benefits providers, such as health plans.

Monica Barron, a senior analyst at AMR Research Inc. in

Boston, says Authoria is one of the first knowledge-management vendors to target the human resources self-service market. "They're really filling a void," she says. And with \$93.5 million in funding, Authoria has the resources it needs to grow.

Authoria HR combines the personal information lifted from human resources man-

agement systems with a regularly updated knowledge base of common information — such as federal wage regulations or rules on tax forms and maternity leave policies — which is stored in a local SQL Server or Oracle database.

Many of the human resources questions that employees ask are standard, and turning over the job of maintaining that database to a vendor like Authoria means less work for the human resources and IT departments, which are traditionally responsible for updating a human resources intranet site, says Loofbourrow.

Upfront Effort

Integrating Authoria with Wells Fargo's PeopleSoft human resources system involved a substantial amount of work, says Johnson. Despite the tables set up in Authoria to make the job easier, IT staffers still had to determine which fields to load into the tables and ensure that the needed data was available and reliable, Johnson says.

The bank is now building a self-service version of Authoria HR for its employees, says Johnson, who expects to take the system live in October. Customizing the knowledge base has proved challenging, she says, because of the many bank experts involved.

Authoria could help with some versioning features, Johnson says. Right now, the software expects material review to occur online; at Wells Fargo, the process involves printing out the content and working on revisions on paper or translating the HTML text into a Microsoft Word file so Word can implement a version history.

Authoria's future plans, says Loofbourrow, are to internationalize the product. The firm is building a European operation and bringing in global expertise on human resources policies and benefits in those countries. ■

Johnson is a Computerworld contributing writer in Seattle.

the buzz
STATE OF
THE MARKET

An Untapped Niche

Although Authoria markets itself to companies with more than 1,000 employees, the market for an application that can present personalized employee benefit information is very broad, because human resources policies are inherently complex, says Monica Barron, an analyst at AMR Research.

Authoria has indirect competition from custom in-house systems and from vendors of general knowledge-base software that contains human resources information, says Brian Jones, an analyst at The Yankee Group in Boston. Direct competition is sparser, says Barron.

Authoria may also face future competition from current partners like PeopleSoft Inc. that now sell back-end human resources packages but may decide to bundle in knowledge-management features.

ProAct Technologies Corp.

White Plains, N.Y.

www.proacttechnologies.com

ProAct, says Barron, has a human-resources-specific knowledge base, as does Authoria. The main difference, she says, is that ProAct offers an option to use its modules, whereas Authoria feeds its knowledge base into an existing human resources framework, like one from SAP AG. ProAct's Human Capital Management software suite couples human resources, benefits and payroll functions with a knowledge base that personalizes information based on an employee's demographics, benefits and security profile. ProAct says its software works in either a self-service or call center environment.

FirstDoor.com Inc.

Kennesaw, Ga.

www.firstdoor.com

While Authoria focuses on providing information to the call center or the employee, FirstDoor gives managers an electronic learning environment that supplies human resources staffers with the information they need to manage their employees, says Barron. FirstDoor says its knowledge base can be customized with data on an individual company's policies.

— Amy Helen Johnson



AUTHORIA HR OFFERS personalized answers to employee questions, says President and CEO Tod Hays Loofbourrow

Authoria Inc.

300 Fifth Ave.
Waltham, Mass. 02451
(781) 530-2000

Web: www.authoria.com

The technology: A Web-based self-service application that integrates with back-end human resources systems to provide personalized benefits information

Company officers:

- Tod Hayes Loofbourrow, president, CEO and co-founder
- Georganne DeSomery, executive vice president
- Peter Schilling, chief technology officer

Milestones:

- 1997: Company founded
- September 2000: Version 3.0 of Authoria HR released
- February 2001: AnswerWise launched

Employees: 225

Burn money: \$93.5 million from Capital Z Financial Services Fund II LP, Van Wagoner Capital Management, UnumProvident Corp. and others

Products/pricing: Authoria HR, Authoria Outsourcer and Authoria AnswerWise start at \$100,000 each.

Customers: McDonald's Corp., T. Rowe Price Investment Services Inc., Wells Fargo and others

Partners: PeopleSoft Inc., Remedy Corp. and SAP AG

Red flags for IT:

- Integration with human resources administrative systems is time-consuming.
- Current partners may add similar functions to their human resources management software.

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A Jury of Your Peers

The best way to find out how much you know, or don't know, can be to ask the IT professionals you work with. But be warned: It's not always a comforting experience.
By David S. Bernstein

MICHAEL DOVE, chief of the management information division at Defense Manpower Data Center in Seaside, Calif., has eight Web developers among the 300 IT workers at the company. You would expect that eight developers working at the same company would

probably be able to answer each other's questions, teach each other their best tricks and shortcuts, and critique each other's work.

But at Defense Manpower, that never happens. That's because those eight developers are spread out among six departments. They probably don't even know that they have peers in the company to

whom they could go with questions, Dove says.

That's why he's initiating monthly sessions at which those eight developers will be able to get together and discuss their work. "Sometimes, in a two-minute conversation, they can get an answer to something they've been working on for weeks," Dove says.

Learning from one's peers is a vital but often unappreciated part of the professional development of many IT workers. You tend to notice it when it's missing — indeed, a common complaint about working for a small IT department is the lack of peers to learn from.

Although they may not have the time or interest in tutoring you step-by-step, often, your co-workers can help you de-

cide what areas to study.

"A lot of times in IT, there are a lot of tools available to do your job, and the trick is to determine which are worth using," says Vince Ryan, a Web developer at Upspring Software, part of Morton Kern Systems Inc. in Boston.

Ryan says that although he prefers to learn tools independently, he seeks advice from his peers to determine where to invest his time. Recently, such input led him to sign up for an XML class.

In its best sense, feedback includes constructive criticism that helps a worker identify areas of weakness, technical or otherwise, to work on improving. Those comments usually come from a manager, and from co-workers only when things boil to the point of a shouting match.

But it is possible to get those criticisms out of your co-workers, if you make clear that you're open to hearing such comments. "The more interaction you have with people, the more comfortable they are giving you criticism," Ryan says. Usually, that comfort level is heightened by approaching the subject casually, rather than formally.

Instead of striding into a co-worker's cubicle with a checklist on which to rate you, try having a conversation over lunch about your skills, and try to draw out the person's opinions about you.

Dove says that IT managers have a responsibility to set up opportunities for feedback and interaction. He has incorporated co-worker input into reviews by asking IT employees to send him anonymous e-mails with comments about their peers.

Dove says he's found that even with anonymity, 80% of the comments have been positive, and only 20% have contained critical advice. Nevertheless, he and his employees say they've found the process helpful. "People often don't know what their peers think of them," Dove says. ▀

Bernstein is a freelance writer in Watertown, Mass.

Getting In on the 360 Review

Companies with aggressive human resources departments have adopted the concept of the 360-degree review, in which co-workers anonymously rate each other on a checklist of attributes. But if you aren't working at a company that does that, can you find a way to do one yourself?

Yes, says Ron Dukenski, a human resources consultant at the Quadrangle Group in Newtown, Conn. Dukenski prepares elaborate peer reviews for clients, but he says anyone can simulate the effect.

He advises that you seek out a trusted co-worker and establish a contract of sorts, wherein you agree to give each other ongoing, honest feedback. By establishing it as a mutual contract, Dukenski says, you can remove the discomfort that holds people back from asking for, or giving, honest criticism.

The contract can work in informal ways, with each partner commenting whenever he has something in mind. Or the two can establish a regular periodic time — say, over lunch every two weeks — to converse.

The lack of anonymity can be a benefit. "I'm not a big believer in anonymous feedback," Dukenski says. "It doesn't really help you interpret where somebody is coming from with a comment or give you the ability to follow up with more questions about what they mean."

The two contracting workers can even seek out checklists of employee attributes (easy to find on the Web) and rate each other from time to time. Even better, says Dukenski, is to get a description of the criteria your manager uses to evaluate performances and use that.

Finally, Dukenski suggests finding at least two contract partners: one to judge your technical skills and one to evaluate your interpersonal skills. It's hard to find one person whom you would trust to judge you on both, he says.

— David S. Bernstein



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Waltech, Inc. is a software consulting firm providing services throughout the United States. We are seeking to fill multiple full-time positions for Software Engineers, Programmer Analysts, and Consultants, to design, develop, plan, test and administer computer programs. Positions require a minimum of a Bachelor of Science (certain positions require M.S. degree) in Computer Science, Engineering related field or equivalent, and 0-5 years of experience (depending on position) in one or more of the following skills:

Development Tools & Languages: Developer 2000, Power Builder, C, C++, Visual Basic, Informix, COM/DCOM, TCP/IP, Pro*C, Java, HTML, XML, iPlanet, Vignette Story Server, PHP3, LDAP, Unix, Windows

Databases: Oracle, Informix, 4GL, Sybase, MS SQL Server, PL/SQL

Networking (CCIE's preferred): Routers, Firewall, Cisco Works, HP Open View, Sonet, ATM, SS7

Administration: Sun Solaris, Sun Sparc, HP-Unix, AIX, Veritas, Veritas Clustering, Sun Clustering, DNS, NIS, NIS+, NFS, Sybase, Oracle, Informix

Please mail resume to: Human Resources, Waltech, Inc., 199 Forest Street, Marlboro, MA 01752; or e-mail to: resumes@waltechinc.com

SOFTWARE ENGINEER:

Research, design, and development of computer software systems, in conjunction with hardware product development, applying principles and techniques of computer science, engineering and mathematical analysis; analyses of software requirements to determine feasibility of design within time and cost constraints; consults with hardware engineers and other engineering staff to evaluate interface between hardware and software, and operational and performance requirements of overall system; formulates and designs software system, using scientific analysis and mathematical models to predict and measure outcome and consequences of design; develops and directs software system testing procedures, programming, and documentation; consults with customer concerning maintenance of software system coordinates installation of software systems. Requires Bachelor Degree in Computer Science, Engineering or a related field. 40 hrs/wk, M-F, 8-5. Position available in Charlotte, NC. Send resumes to: Gail A. Wesline, SAIC, 301 Laboratory Road, Oak Ridge, TN 37831.

Sr. Systems Analyst needed to develop & maintain Oracle based business applications using Oracle Developer & PL/SQL. Must have MS in Comp Sci, Comp Engg or related with relevant work experience. Send resume to: Paul Wu, Associated Press, 50 Rockefeller Plaza, MIS Dept., NY, NY 10020.

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Programmer/Analyst (Atlanta, GA): Analyze, design, develop, implement & maintain mainframe legacy applications on 3270 systems & distributed database applications. Work w/DB2, CICS, JAVA, C++, COBOL, CORBA, RMI, XML & MSeries for Java API for integration w/legacy applications. Req. B.S. in C.S./Electronic Engineer, or other related engineering field plus 2 yrs exp. in job offered. Resume to: HR manager, SoftTech Inc., 6025 The Corners Pkwy, Suite 204, Norcross, GA 30092.

Comp s/ware co in Skillman, NJ seeks Progrmmr/Systms Analysts/ Softwre Engrs. All positions req Bach degree in Comp Sci/Comp Eng/Math or reltd field & 1-3 yrs exp. Send resume to Optimal Solutions Inc, 3 Richmond Dr., Skillman, NJ 08858.

Product Support Specialist Assist in identifying research source gathering info, performing analysis of market & customer needs & applications. Provide customer contact & tech. support on product upgrades & problem resolution, provide coord. w/ GenRad customers support groups. Learn & dev. an advanced tech. GenRad's, & competition's new product to provide assistance in closing a sale. Apply learned tech. knowledge to new situations to correct customer product-related problems. Ulysses Customization: using Ulysses knowledge, JSP, EJB, SOL etc. to create client applications for GenRad customers. Must have B.S. in CE, CS or rel. & 1 yr. exp. in above position or 1 yr. exp. in rel. field w/ability to use JAVA/JDBC, SQL/Oracle, Visual Basic, JSP/EJB, VJ++, Visual C++, Photoshop, Front Page. 40.0 hr/wk. 8:00 - 5:00 Send resume to: HR Director, Attn: KL 405 GenRad, Inc. 7 Technology Park Drive, Westford, MA 01886-0033

Several computer related positions available for large transportation and logistics services company. Degree, technical skills & experience vary per positions. Send resume to: vivianirizarry@ups.com or United Parcel Service, P.O. Box 833, Mahwah, NJ 07430, Attn: Vivian Irizarry, A-563, Ref. #1.

Software Engineer Research, design & develop software products & enhancements using Java, C/C++, RMI CORBA. OOAD/OOP, WebSphere, Oracle8i, etc. Develop testing procedures, programming & documentation. Perform full life-cycle develop. REQ: Master's Deg. in Comp. Info Sys. or Related, plus 1 yrs. exp. in job offered, or 1 yr. as Programmer. Send resume to L.B. Whitfield, NetVendor, Inc., 3525 Piedmont Road., Bldg. 6, Ste. 700, Atlanta, GA 30305.

Principal Software Engineer: Responsible for developing, implementing and defining next generation of networking services using high bandwidth InfiniBand technology. The Engineer will investigate and define system requirements and solutions using C/C++, IP networking, UNIX and NT systems, and development tools and languages. Also, duties include engineering IP multicast protocols, designing computer security architectures, and work with real time operating systems. BS/BA in CS, IT, EE or any related field of study plus 5 yrs exp. OR in the alternative, 10 yrs of exp. and no degree. Also must possess experience with: (1) Either routing protocols or IP Networking (e.g. LAN emulation or multiprotocol over ATM); (2) C/C++ and (3) real time Operating Systems (vxWorks, Ose, or Linux). Full time, benefits, salary negotiable. EEOC. Submit resume to ATTN: Mr. Richard Grasso, Director of Human Resources, Paceline Systems Corporation, 50 Nagog Park, Acton, MA 01720.

Oracle Database Administrator

Responsible for administering & tuning Oracle database, including installing, upgrading, maintaining, & monitoring corporate databases. Responsibilities also incl. tuxedo administration in a PeopleSoft environments; support of Siebel, sysAdminal, & EMS operations. B.S. in CS, Physics, or rel. & 3 yrs. exp. in above pos. or 3 yrs. exp. in rel. field w/abil. to use Oracle 8/8i, MS SQL 7, C/C++, Java, JavaScript, HTML, PL/SQL, ArcServe IT, PCAnywhere, HP-UX, Unix Shell Script. Must be Oracle8i Certified Data Base Administrator & Microsoft Certified Systems Engineer.

40.0 hr/wk. 9:00 - 5:00

Applicants send resume to:

Mr. Robert Halbert
VP of Employee Services
ANTEC Corporation
11450 Technology Circle
Duluth, GA 30097

Programmer, Sr. needed for dynamic, rapidly growing IT consulting firm. Must research, design, dvlp, & test applicatn level s/ware & network s/ware for IT applicatns, set operatnal specs & formulate & analyze req'mnts applying principles & techniques of comp. sci., engnrg, & mathematical analysis. 4+ yrs of work rel. exp. B.A. or B.S. in comp. sci., computer engnrg or other rel. s/ware engnrg disciplines. Must have exp. coaching XP on major projects, & be an expert in the principles of object-oriented development such as design patterns & re-factoring. Must have ability to lead & have exclnt communicatn skls. Knwldg of specific language incl. Java, C++, & Ruby, & tools such as JUnit, Weblogic & Oracle. Salary commens. w/exp. Plse send resume to jobs@u2i.com or mail to Albert Jovel, Union Square Internet Development, 535 8th Ave., 8th fl., NY, NY 10018.

F/T Programmer/Analyst. Responsible for designing & testing applications using ID Edwards OneWorld software 73.3 w/Oracle. Develop conversion programs & modify source codes using SQL, ODBC & Unix. Perform software modifications, evaluate business requirements & design customized applications. Must have Bachelor's degree in Computer Science, any Engineering discipline or related field. Foreign degree equivalent accepted. Must have 2 yrs. exp. in job offered or position w/same duties. Salary: \$80,000. Resume to: Brian Jones, PSS World Medical, Inc., 4345 Southpoint Blvd., Jacksonville, FL 32216.

Seeking qualified applicants for the following positions in one or more of the following locations - Memphis, Orlando, Irving/Dallas, TX and Colorado Springs: Programmer, Programmer Analyst, Sr Programmer Analyst, Technical Advisor, Software Engineer, Technical Analyst, Sr Technical Analyst, Systems Programmer, Sr Systems Programmer, Business Applications Analyst, Sr Business Applications Analyst, Techn Business Appl Advisor, Database Administrator and Sr Database Administrator. Candidates must have a Bachelor's degree in relevant field. Experience varies based on position (from 0-7 years). Experience desired with one or more of the following: C, C++, UNIX, Java, SQL, logistics applications, object-oriented development, relational databases, OLAP tools, client/server technology, CASE management. Send resumes to FedEx Corporate Services, Attn: Christin Decker, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V

System Software Developer: of new tools/technologies & components of MaxxServer system. (e.g.: campaign management, ad serving, statistics collection, e-mail management, system administration, etc.) Develop database schemes to support storage retrieval, cataloging & management of content, support customer roll out, on going support of components.

Req: MS or equiv. in Computer Science, Engineering or related field; 6 mos. - 1 yr exp in mathematics & computer science, incl. Wavelet theory & analysis, digital video & image processing, and 1-3 yrs exp in programming in C, C++, HTML/XML, Java, JDBC, Java serverlets, and Java server page. 40 hrs/wk, \$53,750 - \$70K/yr. Interview/job site: Raleigh, NC. Send resume to: Mona McCall, Office Manager, Summus Ltd., 434 Fayetteville Street Mall, Suite 600, Raleigh, NC 27601

Database/Datawarehouse Architect. Analyzes user requirements & designs OLAP databases (ORACLE 8i, Redbrick) using design tools like Erwin, Designer 2000. Also develops database applications in PL/SQL, Java 2 EE, Perl, XML using development tools like KAWA, TOAD, SQL Navigator, JRUN. Must be highly skilled in OLAP Concepts like Star Schema, Cube building. Must be skilled with OLAP tools like Brio Query. Strong knowledge of trade Internals and Database tuning required. Bachelor of Science in Computer Science, engineering, or math-related and 3 years experience in job offered required (Datawarehousing and OLAP technology) \$70,000.00/year. Must be able to travel.

Apply by resume to Murali K. Suddala, President, Capricorn Systems, Inc., 3569 Habersham-at-Northlake, Bldg. K, Tucker, Georgia 30084.

F/T Chief Technology Officer. Resp. for managing co. MIS dept., directing & monitoring all aspects of design, production, implementation, distribution & marketing of co. software applications product line. Must have Bachelor's deg. in CS, any Engineering discipline or related field. Foreign deg. equiv. accepted. Must have 8 yrs. exp. in job offered or position w/same duties. Salary: \$125,000. Resume to: Marcia Taylor, Bennett Technology Group, LLC, 1001 Industrial Pkwy., P.O. Box 569, McDonough, GA 30253.

F/T Server Manager. Design & maintain Web server architectures infrastructure for company website. Inc. server environment IIS, ASP, & C++. Resp. for implementing, testing & maintaining operating system software patch levels across website & ensuring highest levels of data integrity & security. Resp. for site backups & work w/NOCs & co-loc. prov. Troubleshoot web servers & SQL db servers. Member of primary support team for site issues, 24x7 website & HHNT high transactions. Develop & support GIS systems using Mapinfo. Must have knowledge of UNIX, NT Server, IIS 4 & 5, TCP/IP, HP/Manage & networking in CISCO & 3COM environment. Must have Asso. degree or equivalent in Comp. Science, any Engin. discipline or related field. Foreign degree equiv. accepted. Must have 5 yrs. of exp. in job offered or position w/same duties. Salary: \$65-72,000. Send resume to James Dale, Headhunter.Net, Inc., 333 Research Court, Suite 200, Norcross, GA 30092.

System Analyst required by Software Consulting Company. Duties include day to day mgt. of web based & mobile technologies, projects involving client interaction for system requirements, analysis, design & architecture of solution, prototype development, identification & development of middleware components like COM, JavaBeans, EB, database design, inter-team mgt., project mgt. using Visio, IBM Visual Age for Java, Allaire Jrun, MSeries (XML Messaging), Rational Rose 891, RDBMS such as Oracle 8.1, SQL Server, MS-Project, resource planning & mgt., methodology identification, evaluation & adoption, process definition & implementation & post-implementation support. Responsible for the mgt. of projects, defining methodology & processes, managing developers & strategic planning. Job to be performed in Lebanon, NH & other unanticipated client sites throughout U.S. as assigned. Qualifications: Masters degree and one year of experience. Will accept Bachelors degree plus five yrs of progressive experience in lieu of above Stated experience. Salary: \$71,000.00/Year. Hours: 40 Hours/Week; 9:00 AM-5:00 PM. Responses to be submitted in two (2) copies of Resume/ letters of application to: JOB ORDER # 2001-169. P.O.BOX 989 CONCORD, NH 03302-0989

Several computer related positions for large telecom and computer services company in the international airline telecom industry. See www.sita.com for details. Positions in the New York and Atlanta office. Send resume to: Ms. CJ Vanner at SITA INC at 3100 Cumberland Blvd., Suite 200, Atlanta, Georgia 30339.

Web Developer wanted by Business Consulting Services Co in Manh. Dev & design web sites; troubleshoot web site designs; design graphics & interactive media. Bach in Design, Vis Communications or Comp Sci & 1yr exp in job offered req. Respond to: GOB/HR Dept, PO Box 4241, GCS, NY 10163.

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We are seeking a qualified professional to perform analysis, design, testing and implementation of approved automated solutions to business opportunities. A related Bachelor's degree or equivalent experience is preferred. At least 3 years experience in the below-stated technologies is a must:

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Programmer - Analyst: Plans, develops, tests documents computer program for paper conversion company. Meets with each department to evaluate current procedure, objectives for program. Outlines user needs with flow chart and diagrams to develop program. Designs sample of expected input screen or the expected report. Prepares, documents program by converting project specifications into detailed instructions, logical steps for coding. Enters commands to run, test program. Replaces, deletes or modifies code to replace errors. Prepares documented procedures outlining step by step instructions for data input. Writes user manual for complete system. Trains users and troubleshoots when necessary. Upgrades system and programs when necessary. BS in CIS or equivalent required. 40 hours/week; \$60,000 annual salary. This is an employer paid ad. Must have proof of legal authority to work in the U.S. Report or send 2 resumes to North Metro, Job Order #GA 6983401, 2943 N. Druid Hills Rd., Atlanta, GA 30329 or the nearest Georgia Department of Labor Field Service Office.

SR. E-COMMERCE CONSULTANT/SOFTWARE DVLPR.

Resp. for dsng. & dvlpm. of e-commerce system architecture for Internet security & web apps. Duties: (1) dsngng. & dvlpg. IT n-tier apps. utilizing Enterprise Java Beans (EJB), Java Servlets (JSP) & Java Servlets for WebLogic EJB Server; (2) providing tech. support for multiple language & operating system interfaces; (3) dsngng., dvlpg. & implementing electronic payments system for clients; (4) dsngng. & dvlpg. proprietary interfaces in Java & VB languages; & (5) documenting related scripts. M.S. in Com. Sci., Electrical Engrg., Math or Physics plus 1 yr. exp. in position offered or as Software Engr. reqd. Must know JavaScript, JSP, EJB, ASP, Java Servlets & JDBC programming languages; MS-SQL & Oracle 8 databases; HTML, XML & XSL mark-up languages; & HTTP, TCP/IP & EJB app. servers Internet tools. 40 hrs/wk, 8 am - 5pm. \$65,000/yr. Qualified applicants report/submit resume to: Joseph Stratico, Dir., Pittsburgh/Allegheny Co. Career-Link, 425 Sixth Ave., Suite 2200, Pgh., PA 15219. Refer to Job Order WEB 177745.

Several computer related positions for large telecommunications consulting services company. Send resume to: Jennifer Smith, Sema, 6 Concourse Parkway, Suite 2700, Atlanta, GA 30328.

Programmer/Analyst (Melrose Park, PA) Uses C/C++, Java, Visual Basic, ASP, Crystal Report on Microsoft platforms. Exp. in G programming. BS in Comp. Science, Electronic Eng or similar. Fax (215) 782-2083. REF. BA.

Senior Software Engineers. Duties include: Design and develop software applications for the e-Business analytics market. Design and develop client server database applications for use on UNIX and Windows NT platforms with Visual Basic, C++ and Java programming languages. Develop databases using ORACLE and MS-Access. Develop Graphical User Interfaces with Visual C++, MFC, SDK, and OLE/COM. Enhance and customize existing software applications. Test software to determine reliability. Provide strategic solutions to inter-operability and upgrade problems. Assist clients with installation and use of software. Minimum Requirements: MA/MS or equivalent in Engineering, CS or related field of study (Foreign equiv. accepted) Or in the alternative BS/BA in Engineering, CS or related, plus 5 years of progressive experience in either the job offered or related occupation in engineering, systems analysis, programming or related. ALSO, must have demonstrated knowledge or experience with: (1) developing GUI client/server applications using Visual C++, C++, MFC, and Java; and (2) database development using Oracle and MS-Access. Multiple openings. Offered salary is \$82,600/year (40hrs/wk). Std Company Benefits. Send resumes in duplicate to: Labor Exchange Office, Case #20013062 and Case # 20012065, 19 Staniford St., 1st fl., Boston, MA 02114.

Several computer related positions available for large software development, support and sales company. Degree, technical skills & experience vary per position. Send resume to Phyllis Scott, MAPICS, Inc., 1000 Windward Concourse Parkway, Suite 100, Alpharetta, GA 30005.

Software Engineer required by Software Consulting Company. Duties: System analysis, design & development, implementation of application system, infrastructure design, development, testing & trouble shooting, design & development of E Commerce portals, corporate-wide infrastructure design & implementation, training users, assisting in the selection & recruitment of programmer/analysts, design & development of client server systems, user requirements analysis, project design, development & mgt., project evaluation & review techniques. Duties include use of NT Server, UNIX, SQL Server, Exchange Server, System mgt. Server, Visual Basic, Microsoft Project, Terminal Server, TCP/IP, WAN Protocols, Oracle, CISCO routers & Switches, Servers & Workstations, T-1 Line etc. Job to be performed in Lebanon, NH & other unanticipated client sites throughout U.S. as assigned. Qualifications: Masters degree and one year of experience. Will accept Bachelors degree plus five yrs of progressive experience in lieu of above. Stated experience. Salary: \$71,000.00/Year. Hours: 40 Hours/Week; 9:00 AM-5:00 PM. Responses to be submitted in two (2) copies of Resume/letters of application to: JOB ORDER #2001-172. P.O. BOX 989, CONCORD, NH 03302-0989.

NICE Systems, Inc., a leading global provider of digital recording and quality management solutions, needs a qualified Systems Engineer. Qualified applicants will have completed at least 2 yrs toward a BS in Computer Science, Engineering, Math or a related discipline & 1 yr exp in job offered or 1 yr exp as a Technical Specialist. Also, must have exp with Visual BASIC, C++, VISIO and Adobe PhotoShop. Please send resumes to Vivian Walker, NICE Systems, Inc., 200 Plaza Drive, Secaucus, NJ 07094 or fax resume to (201) 617-4220.

FLUENT, INC., Lebanon, NH, has an opening for a Senior Software Development Engineer. Successful candidates must have exper. w/ fluid flow/heat transfer, large-scale software design, flow visualization algorithms, & post-processing of CFD software. If interested, send resume to Ruth Shepard, Human Resources Representative, REF: DEV-SRENG, Fluent, Inc., Centerra Resource Park, 10 Cavendish Ct., Lebanon, NH 03766.

Programmer Analyst sought by Co involved in Accounting S/ware for Law Firms in Blue Bell, PA. Must have Bach or equiv in Comp Sci, Engg or equiv & 1 yr exp. Respond to: HR Dept, ASA Legal Systems, 475 Sentry Parkway, Blue Bell, PA 19422.

Systems Consultant

royalblue financial corporation is a leading supplier of global trading software. Employing in excess of 500 staff and with offices in New York, London, Frankfurt and Tokyo, royalblue has developed the fidessa trading platform to provide the most complete range of applications available for trading cash equities across the world's markets. While royalblue has a heritage of 18 years in Europe it has only been in the USA since July 1998 and as such is still in its infancy with a tremendous growth opportunity.

The following are the main responsibilities:

- ★ Specialist in fidessa infrastructure software providing advice and guidance to project teams and support staff.
- ★ Development of fidessa server configuration files
- ★ Dvlpm. of Back-Office interfaces
- ★ Train new staff on fidessa infrastructure software
- The specific prerequisite skills required are the following:**
- ★ Extensive knowledge of the US equity markets
- ★ Programming in C++, TCL, and UNIX scripting
- ★ Familiarity with the UNIX Operating System
- ★ Knowledge of the industry standard FIX and CMS interface formats

Apply to: royalblue Financial Corp., 17 State Street, New York, NY 10004, Attn: Human Resources (SC)

MIS Manager wanted by Spanish Media & Entertainment Co. In Miami, FL. Must have Bach or foreign degree equiv in Comp. Info Systems & 1 yr managerial exp in accounting software industry. Mail resume only to Elizabeth Colon TI II, LLC 6355 NW 36 St. Miami, FL 33166.

F/T Supervising Software Engineer. Responsible for designing and developing device drivers for UNIX operating systems like FreeBSD for Infiniband architecture, V.I architecture, NAS SAN and RAID. Design, documenting, coding, using kernel debuggers, using source code control and managing teams. Must have a Master's degree in Computer Science or foreign degree equivalent. Educational background must have included: C/C++, Parallel Processing, OOP, Windows, and UNIX. Salary: \$88,388 - \$90,000/yr. Send resume to: Nanda Chheda, A.M.I., 6145F Northbelt Parkway, Norcross, GA 30071.

Siebel eBusiness Implementation Consultant: Bus analysis; installation & integration of Siebel eBusiness Solutions using CRM techn, VB, ASP, Unix, Oracle, DB2 & SQL Server for financial serv & telecommunications industries. Req: BS in comp sci, engg or related field 2 yrs exp as programmer or consult. \$55K + up. Resume to: M Heffley, Adrenaline Technologies, 1144 Canton St, Ste 205, Roswell, GA 30075

Senior Developers. Will develop, implement and provide operational support of application programs to support one or more business segment components of the IT business systems plan. Develops project plans and manages those plans, as appropriate. Prepare detailed specifications from which application programs will be written. Develop application systems that comply with the standard system development methodology and concepts for design, programming, backup, and recovery to deliver solutions that have superior performance and integrity. Assumes responsibility for overseeing the integrity of complex/critical business applications on a day-to-day basis. Minimum Requirements: Masters Degree (foreign equivalent accepted) in CS, MIS, CIS or related computer degree or field of study Or in the alternative BS/BA in CS, MIS, CIS or related computer degree or related field of study, plus 5 years of progressive experience in either the job offered or related occupation (i.e. SW Engineer or Programmer/Analyst), ALSO, must possess demonstrated knowledge of: (1) C, C++, SQL and Oracle tools and langs.; (2) multi-platform mainframe and AIX Client-Server applications; and (3) working in distributed processing environments. Offered salary is \$75,000/year (40hrs/wk). Std Company Benefits. Send resumes in duplicate to: Labor Exchange Office, Case #20013057, 19 Staniford Street, 1st fl., Boston, MA 02114.

Software Engineers-multiple positions, wanted by MIS Dept. of Laboratory in Fort Lauderdale, FL. Must have B.S. & 5 yrs. comp exp or M.S. in Comp. Sc. & expert knowledge of Oracle, ASP, VB, & Actuate. Respond to: Bill Janda, ESRD Laboratory, 831 NW 57th Street, Ft. Lauderdale, FL 33309.

Software Engineer: Develop life cycles using JAVA, HTML, ASP, Java Script, C++, VB, COM/SCOM, Microsoft Transaction Server, NAS, Net Dynamics, Oracle & SQL Server Database. M-F; 8:30am-5pm; Must have BS or equiv. in comp. sci, electronics, communications eng'g. or rel. field & 2 yrs exp. Send resume to S. Batista, LDS, 131 Madison Av., 2 fl, Morristown, NJ 07960; Job in NYC.

SOFTWARE ENGINEER utilize MS SQL Server, Sybase, Oracle, C, C++, PL/SQL, Power Builder, on Windows NT/95, Sun Unix, Novell NetWare, and Windows 3.11 OS to design, develop, test and deploy software applications: MS degree in Comp. Science/Related Field with 2 yrs. exp. in job offered. \$66,789/yr. & Benefits. Applicants having proof of legal authority to work in U.S. respond to Georgia Depart of Labor Job Order #GA 6997705, 2943 N. Druid Hills Rd., Atlanta, Georgia 31708-6401 or the nearest Department of Labor Field Service Office.

VP, Technology (New York) sought by digital media co. Bachelor's in Comp. Sci + 2 yrs. in job or 2 yr. related exp. in designing, implementing & strategizing IT solutions. Please respond to H.R., Digital Locker, Inc., 190 9th St., San Francisco, CA 94103.

F/T Sr. Software Engineer responsible for design and development of RAID Firmware and Operating Systems Services for company's RAID Controllers and programming in C, 1960, and various assembly languages. Designs, develops, debugs, test, and maintains software modules written by self and others using Intel1960 toolkit, Windows NT, UNIX, SCSI, PCI, i20, SNMP, ISO 9001 Standards, Solaris x86 Assembly, and MS Visual Sourcesafe. Must have a Bachelor's degree in Electronics and Communications Engineering or foreign degree equivalent. Must have 4 yrs. of exp. in the job offered or a position w/same duties. Salary: \$85,000 - 95,000/yr. Send resume to: Nanda Chheda, AMI, 6145-F Northbelt Pkwy., Atlanta, GA 30071.

IT CAREERS IN FINANCIAL SERVICES



Information technology is the power behind how financial services are serving their customers, opening options on how customers can check accounts,

invest money and interact with their financial consultant. At the same time, IT is driving improvements within the financial services institutions, from analyzing data to improve the capture of dollars to put money into play more quickly.

PricewaterhouseCoopers serves more than half the financial services companies listed in the Global 500. The firm provides services ranging from definition of business processes to IT strategic planning to performance improvement. "A lot of our current work involves back office areas," explains Mark Farrington, director of diversity recruitment and retention at PwC.

"To meet these client needs, we need people who have experience with Oracle, database analysis, SAP and its financial modules and with business-to-

business systems," says Farrington. "We also need people who have experience leading and functioning as a team player. I'd say 99 percent of our work is on projects, and you'll be working on teams that involve your colleagues at PwC and the client team. Industry experience is great - knowing what is driving our clients' needs so that you will be able to add value quickly."

The firm hires entry-level and experienced consultants and tends to develop project managers from within the organization. "Geographically, as long as you live near an airport, we don't care where you live. We have operations throughout the world, but the financial hubs tend to be on the East Coast and Chicago."

Career development is a strength at PricewaterhouseCoopers. "We don't have specified career tracks," says Farrington. "You identify what you would call your major - where you want to specialize, such as strategic change, customer relationship management, financial performance. Then we work to position you to work on these types of projects. We want you to demonstrate competency for the client's benefit and then move you on to the next project where you'll tackle a bit more." To assist in this

development, PwC requires 120 hours of training over a three-year period. "We are a learning and applying organization, so this is part and parcel of how we operate," Farrington says.

Farrington says aside from the career aspects, PwC offers employees a diversity of work and strong people and organizations to work with. "You have the opportunity to show your stuff here," he explains. "Another real plus is the diversity of people who work with the firm. We want our firm to look like a United Nations because that's who our clients are - the companies that are leading the world."

To support a diverse population, PwC has affinity groups for specific cultural groups. "Often times you can come into an organization at orientation and see a group of new employees who do look like the UN, but then you may not see anyone who looks like you for another six months. Our affinity groups are designed to overcome that situation - answering questions from how to deal with a specific issue at work to where to get your hair cut. A lot of companies hire a diverse population and believe the good will survive. At PwC we want more than that for you; we want you to thrive."

For more job opportunities with financial services firms, turn to the pages of ITcareers.

- If you'd like to take part in an upcoming ITcareers feature, contact Jonis Crowley, 650.312.0607 or jonis_crowley@itcareers.net.
- Produced by Corole R. Hedden
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Computer AlphaSoft Services Corp. is a rapidly growing systems integration & consulting services provider. We are currently recruiting for the following full time openings in Walnut Creek, CA:

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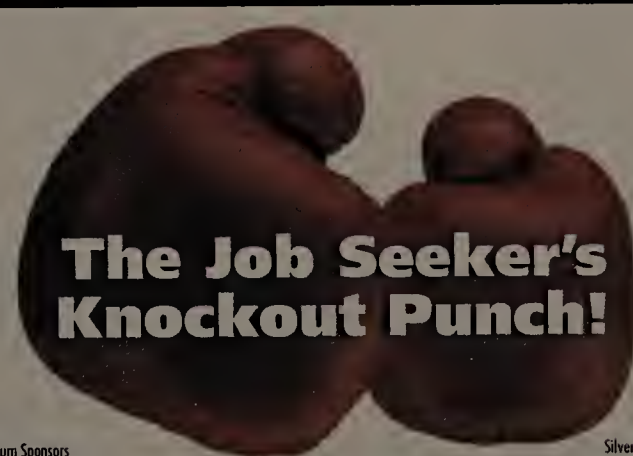
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Government, Industry Call For New Cybercrime Law

House panel told of need for tougher penalties, more aggressive enforcement

BY PATRICK THIBODEAU
WASHINGTON

STOPPING cybercrime is going to require new laws, more money and legal protections for companies that share security data with the government, lawmakers were told last week.

During three hearings held in the past month, the U.S. House Subcommittee on Crime heard several ideas for cybercrime legislation — including tougher penalties and more funding — from govern-

ment officials, trade groups and private companies.

Among those calling for action at last week's final hearing was Robert Chesnut, a vice president at eBay Inc. in San Jose. The online auctioneer wants it to be illegal for spammers to "harvest" e-mail addresses — a "parasitic process" that undermines public confidence in e-commerce, he said.

"[Individuals constantly] come to our site, steal our addresses and then use those e-mail addresses to send illegal spam," said Chesnut. EBay has

more than 29 million registered users.

Trade group officials called for legislation to protect corporate security data shared with government agencies from public disclosure under the federal Freedom of Information Act (FOIA). "Companies worry that ... FOIA requests for information they have provided to an agency could prove embarrassing or costly," said Harris Miller, president of the Information Technology Association of America in Arlington, Va.

Sen. Robert Bennett (R-Utah) is expected to introduce legislation that would provide an FOIA exemption to corporate security data. In the

House, Reps. Tom Davis (R-Va.) and James Moran (D-Va.) last year co-sponsored similar legislation. The House and Senate bills are expected to be introduced before Congress takes its August recess, according to congressional sources.

Those representing business interests emphasized that law enforcers have to move aggressively, particularly in intellectual property protection.

"Criminal prosecution and penalties provide deterrence in a way that civil judgments cannot," said Bob Kruger, a vice president at the Business Software Alliance in Washington. He added that piracy costs some \$11.75 billion annually.

There has been progress in

Cyberlaw Upgrade

The Bush administration wants Congress to make it easier to track cybercriminals.

Trap and trace: Officials want to ensure that laws used to trace phone calls apply to computer networks.

One-stop shopping: A law that would let a judge authorize a signal trace extending over many jurisdictions.

stepping up the pace of prosecutions, but a sustained effort is needed, Kruger said. "Pirates need to know that they stand to lose not just money but also their liberty," he said.

Rep. Lamar Smith (R-Texas), the committee chairman, said many laws haven't been updated to reflect new technologies since the mid-1980s. "We hope that these hearings will result in some legislation," he said. ▀

Continued from page 1

Access Law

The U.S. Agency for International Development has been using a combination of manual and automated techniques to ensure that its 50,000-plus Web pages are compliant. The agency has taken several steps, including modifying large data tables to enable them to be read with assistive technologies and providing training on the law's requirements for employees who provide content.

Among those standing to benefit from the law is Beth Ostrowski, a federal employee who is blind.

Ostrowski, a manager at the Health Care Financing Administration, uses a screen reader, which converts text to speech, to read Web pages. But she found that her own agency's Web site, Medicare.gov, originally didn't work well with

screen-reader software because the information couldn't be easily translated into a linear format. "It had no logic to it," she said.

That's been changed, and the agency now offers a screen-reader version of Medicare.gov that's dynamically generated whenever changes are made to the Web site. "The webmaster doesn't have to maintain a second version," said Stephen Jones, a project manager at Fairfax, Va.-based American Management Systems Inc., a supplier of government procurement and financial management systems.

Private-Sector Implications

The impact of the rule on the private sector remains to be seen, but it could be broad.

The law "is going to drive private-sector behavior," said Greg Pisocky, a business development manager at San Jose-based Adobe Systems Inc., which has made the latest ver-

sion of Acrobat software accessible to the disabled. "Although we are not designing products exclusively for the government, we are attempting to make this very large customer of ours satisfied, and as a result, the ancillary benefits will be derived by our commercial customers."

The private-sector Web sites that aren't accessible are missing out on business, said Ostrowski. "The more accessible the site is, the more business sense it makes," she said.

Although the merits and goals of the law have been widely praised, trade groups are concerned that the law's requirements don't give vendors clear guidance in meeting the rules. "My worst-case fear is there is arbitrary dropping of products because they are not 100% compliant," said Bartlett Cleland, a vice president at the Information Technology Association of America in Arlington, Va. ▀

Timberland Taps High-Tech Vet Brigham as Its New CIO

BY CAROL SLIWA

Seeking to tap his strong operational background, The Timberland Co. has named Steven Brigham as its new CIO.

Brigham succeeds Yusef Akyuz, who left in November to become CIO at The Stride Rite Corp. in Lexington, Mass.

Brigham, who joins Timberland from a high-tech firm, told *Computerworld* that he will be working to develop a global IT strategy for the Stratham, N.H.-based footwear and apparel manufacturer and a retailer.

"The IT architecture currently is a best-of-breed strategy, and we're trying to determine what the best investments are going forward," Brigham said, adding that Timberland is "definitely going to

simplify and leverage our current investments."

Right now, Timberland has multiple homegrown and "no-name-brand" enterprise resource planning systems, as well as "a myriad of other applications" from smaller application vendors running on its Unix and IBM AS/400 systems, Brigham said. It also uses software from Rockville, Md.-based Manugistics Group Inc. for its supply chain operations.

Brigham joins Timberland from Adaptive Broadband Corp., where he served as CIO and vice president of supply chain operations. The Sunnyvale, Calif.-based data networking company last month announced plans to reduce its workforce by 60%. ▀



FRANK HAYES/FRANKLY SPEAKING

Counting Casualties

SO HOW BAD is the Great Dot-Com Die-Off? That's what a reader asked me in March. We all know that lots of Internet-related businesses have shut their doors in the past year. We've heard about the layoffs, the inability to get another round of funding, the ripple effect of abandoned office leases and downward pressure on IT-shop salaries.

But how bad is it? The 95% death rate predicted by Gartner Inc. President Michael Fleisher last year? Or the 5% counted by San Francisco research firm Webmergers Inc.?

Just how much of the sky has fallen, anyhow?

Answer: Plenty. And more of it is falling every month.

Never mind Gartner's guesstimate. When Fleisher speculated last year that 95% to 98% of all dot-coms would be pushing up daisies by the spring of 2002, he had no numbers backing him up — just a firm belief that what he called "Old Economy concepts" would emerge triumphant over a bunch of twentysomethings playing air hockey and doing business without a realistic profit model.

He had no numbers. I finally found some.

According to Webmergers, at least 493 "substantial" Internet companies have gone belly-up since January 2000. That word *substantial* is important. Webmergers counts only companies that went public or got at least \$1 million from venture capital firms or angel investors. By Webmergers' reckoning, that leaves between 7,000 and 10,000 substantial dot-coms still alive.

That doesn't sound too bad, does it? A 500-in-10,000 mortality rate is only 5%. So why all the hoohah about a die-off?

Because that's not all. Along with the official dead, Webmergers counts more than 1,500 mergers and acquisitions since the beginning of last year.

Think those don't count as part of a die-off? Think again. Most of those companies *had* to be acquired. They had run out of funding. Their oxygen was cut off. They couldn't survive on their own. And the vast majority of those dot-coms were acquired by other dot-coms — some of which were themselves acquired or put out of their misery.

Result: The real death rate among substantial dot-coms over the past year has been about 20%.

And they're still dying. Another 2% of them disappear every month — about 50 closures and 120 or so mergers.

And the ones that haven't died yet are gasping for air, with layoffs and spending cutbacks.

And remember, this is the cream. These are the companies whose ideas and proposals were so good that they got a million dollars of other people's money. The rest of the dot-coms — the ones that never made a successful million-dollar pitch — are dying, too. We just don't know how much worse off they are.

Should this worry people in corporate IT shops? Yes.

We should worry about the products and services we'll never get from the companies that dropped dead. We should also worry about the products and services that big vendors may never offer us now that a big, free-spending part of their market has dried up.

We should worry about the people shed by those dead and dying dot-coms. We'll hire some of them, and we'll have to deal with their whip-sawed expectations. We should also worry about our own best people, whose loyalty in sticking with us will be hard to reward with our own tight budgets.

Most of all, though, we should worry about the 80% or 70% or 60% of top dot-coms that will survive the die-off. The ones that make it will be lean, focused and deadly serious. They won't be playing air hockey. They'll be doing cutthroat, hard-edged business — the way you learn to do it only when you've faced death and survived.

And if they're our competitors — well, then we'll *really* have something to worry about. ▀



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SHARK TANK

NEW AND COMPLETELY

inexperienced IT manager takes over when his pilot fish assistant goes on vacation. Day 1: All systems go down. Boss calls fish in. She takes one look at an empty spot where the equipment used to be and asks, "What happened to the router?" Boss says, "You mean that big modem? I thought you said we didn't need it any longer. The light wasn't on, and there were only two cables plugged into it."

NEW APPLICATION

runs slowly and users are complaining, so pilot fish is surprised to hear techie convey one user's great satisfaction. "She said, 'It's jammin'," techie reports. Curious, fish queries user. "No," she laughs, "I said the system was *jamming* — stopping, halting, not letting me do anything."

FORGET THAT 48-PORT

switch for the new e-commerce site, boss tells pilot fish. Make that a 24-port switch to save money, he says. "We won't have more than 24 customers coming into that site at one time."

Y2K PLUS 17 MONTHS Hospital's new Nortel router goes live in May 2001. Pilot fish is double-checking everything when he happens to notice the revision information in the router's firmware. Date on the latest version of the code: 10/18/100.

VALUE ADD One employee's sole task is to cut and paste how-to tips from about a dozen newsletters into a Web-based database for internal use. IT pilot fish suggests he could automate the process, which would retain the original HTML formatting and also let the employee "escape the tedium of all that cutting and pasting." Boss declines the offer. "But I think the cutler-and-paster got the hint that she wasn't adding value," fish says. "She's now using a sans-serif font instead of her old monospace."

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The 5th Wave



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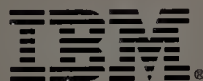
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